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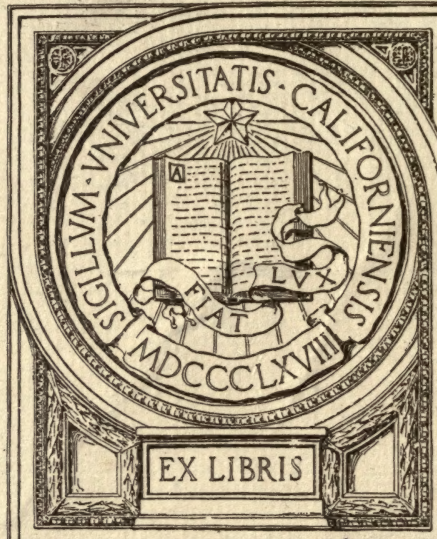

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UNITED STATES GEOLOGICAL SURVEY OF THE TERRITORIES
F. V. HAYDEN, U. S. GEOLOGIST-IN-CHARGE

MISCELLANEOUS PUBLICATIONS—No. 11

BIRDS OF THE COLORADO VALLEY

A REPOSITORY OF

SCIENTIFIC AND POPULAR INFORMATION

CONCERNING

NORTH AMERICAN ORNITHOLOGY

BY ELLIOTT COUES

Ἦλθ', ἦλθε χελιδὼν καλὰς ὥρας ἄγουσα

PART FIRST

Passeres to Laniidæ

Bibliographical Appendix

Seventy Illustrations

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LETTER OF TRANSMITTAL

U. S. GEOLOGICAL AND GEOGRAPHICAL
SURVEY OF THE TERRITORIES,
Washington, D. C., October 31, 1878.

SIR:

I have the honor to transmit herewith, for approval and for publication, Part First of a treatise entitled "Birds of the Colorado Valley", which I have taken great pains to render worthy of favorable consideration as a repository of scientific and popular information concerning North American ornithology.

I am, Sir, &c.,

Elliott Coues

DR. F. V. HAYDEN,
U. S. Geologist, &c., &c.,
Washington, D. C.

256248

PREFATORY NOTE

U. S. GEOLOGICAL AND GEOGRAPHICAL
SURVEY OF THE TERRITORIES,
Washington, D. C., November 1, 1878.

RESULTS of Dr. Coues's continued studies of North American ornithology, in connection with the Survey under my charge, are herewith presented as one of the series of *Miscellaneous Publications* (No. 11). Should circumstances favor the completion of the work, upon which the author is still engaged and which is already not far from finished, the remaining portion may be expected. The present treatise may be regarded as complementary to the "Birds of the Northwest" (*Misc. Pub.* No. 3). It covers much ground not gone over in the latter work, in all that relates to the technicalities of the general subject, as well as to the particular life-histories of the birds composing the remarkable avian fauna of the Colorado Basin. As originally projected for publication in a different connection, the work consisted merely of a report upon the peculiar features of bird-life in the area under consideration, with biographies of the species not treated in the "Birds of the Northwest". But the author's resources have proved to be so largely in excess of the requirements of such a report that the work has outgrown the limits of a single volume, and become a full exposition of our present knowledge of the subject, by the incorporation of much technical matter concerning North American ornithology at large, hitherto the private possession of the author and now first made accessible to the public.

The whole subject of the bibliography of North American ornithology, and of the synonymy of North American birds, has been worked up anew from the very bottom, as a matter of original personal investigation admitting of nothing at second-hand. Not only the birds of the Colorado Valley, but also all others of North America, are thus exhaustively treated, their synonymy and bibliography being at length placed upon a satisfactory basis. In points of accuracy, completeness and thorough reliability it is believed that this side of the work

will compare so favorably with what has before been done in the bibliography of any department of science as to furnish a model for the future.

Since the appearance of the "Birds of the Northwest" it has been a matter of frequently expressed regret that the accounts of the birds treated in that volume did not include such descriptions of the species as should enable those using the work to identify specimens they might have in hand. It has been deemed advisable to supply this want in the present treatise, especially as a considerable proportion of the characteristic birds of the Colorado Valley are not so well known as are most of those inhabiting the region of the Missouri. The descriptions are original, in nearly every case having been drawn up by the author directly from the specimens themselves, with great regard to precision of concise statement. All the species ascertained to occur in the Valley of the Colorado, being those which form the special subject of the work, are thus treated, the other North American birds of which the volume takes account being introduced only with their synonymy and a brief statement of the habitat of each.

Respecting the biographies or "life-histories" of the birds, which constitute the main text of the present volume, the author's view, that this portion of the subject should be so far divested of technicality as to meet the tastes and wants of the public rather than the scientific requirements of the schoolmen in ornithology, will doubtless meet with general and emphatic approval. It is possible to make natural history entertaining and attractive as well as instructive, with no loss in scientific precision, but with great gain in stimulating, strengthening and confirming the wholesome influence which the study of the natural sciences may exert upon the higher grades of mental culture; nor is it a matter of little moment to so shape the knowledge which results from the naturalist's labors that its increase may be susceptible of the widest possible diffusion.

The first twelve sheets of this volume (to p. 192) were printed in 1876, when other engagements obliged the author to interrupt the preparation of the work. The printing was resumed in 1878, and is completed at the date of this prefatory. A few impressions of the earlier sheets may have already been in private circulation, but no portion of the work is published prior to this date. The types of pp. 1–192 having been distributed without stereotyping after only 1,500 impressions had been

taken, it will be necessary to reset this portion if a larger edition is required; and in order to secure uniformity, the composition should be, if possible, in *fac simile.*

The illustrations of the present volume are chiefly those which formerly appeared in the same author's "Key to North American Birds".

According to the report rendered by the author, the present part of the work carries the subject through *Passeres* to *Laniidæ.* The whole consists in a systematic treatise on the families, genera and species represented in the Colorado Valley—that is to say, in the whole region drained by the Colorado River of the West and its tributaries, as far south as the present Mexican boundary of the United States. The watershed of this great river includes Arizona, much of New Mexico, Utah, and Nevada, a part of the State of Colorado, and some of Southern California. The faunal area thus circumscribed is nearly that of the "Great Basin", and corresponds with the "Middle Faunal Province" of some zoo-geographers, as distinguished from the "Western" and "Eastern" Provinces respectively. The main chain of the Rocky Mountains, or great continental divide, bounds it on the east, as the Sierras Nevadas do on the west. To the north lies the Salt Lake Valley; southward the boundary is an arbitrary political one. In the last-named direction, the fauna changes insensibly by the gradual gain of a "neotropical" complexion, though many "nearctic" features are impressed upon the table-lands of Mexico. The proper fauna of that country is prefigured in the area under consideration by the various subtropical forms of bird-life which have successively been found within the border of the United States in the Valley of the Gila, as in that of the Lower Rio Grande of Texas. Both to the east and to the west the geographical boundaries already mentioned correspond quite closely with the limits of the natural faunal areas; for we miss in the Colorado Valley some characteristic forms both of the Pacific slope proper and of the Eastern United States at large. Northward the Great Basin narrows like a wedge thrust in between the converging Eastern and Western Provinces.

No other portion of the United States of equal area offers such varied surface conditions and such climatic extremes. The region is hedged about by mountain ranges of immense extent and elevation, and contains many other lofty chains and peaks, while the greater part of the country is low, hot and arid. The

highly diverse topography of the country is strongly reflected in the temperature, the rainfall, and the course of the seasons of this remarkable region, and these in turn leave their impress upon animal and vegetable life, with the result that contiguous areas of insignificant geographical extent may differ as much in their natural productions as if they stretched over many degrees of latitude. In the Colorado Basin, in fact, as appears to be the case in most portions of Mexico, the distribution and migrations of birds may be regarded as affected by altitude rather than by latitude or longitude; and we have a striking instance of the convertibility of these two factors of the general equation. The birds here find their summer and winter homes, and perform their migrations, rather according to "the lay of the land" than with reference to degrees of latitude.

A portion of the Colorado Valley, in Southwestern Arizona and adjoining parts of California, has long been known as the hottest place in the United States. At Fort Yuma, on the Colorado River at the mouth of the Gila, in latitude 32° 32′, longitude 114° 36′ 9″, the mean annual rainfall does not exceed five inches. A temperature of 119° F. has been recorded, and for weeks in succession the mercury may rise above 100° daily. For several hundred miles the great river rises but little, its elevation at Fort Mojave, for instance, being only about 525 feet. Southern and Western Arizona is a torrid, alkaline waste; in fact, a part of the "Great American Desert"; yet in the central portion of the Territory rise the magnificent San Francisco Mountains, 12,562 feet high, pine-clad, and snow-capped during a portion of the year; and at Fort Whipple, with an altitude of 5,335 feet, the general course of the seasons is not materially different from that in the Middle Atlantic States. A day's journey from the last-mentioned locality will show differences in the bird-fauna comparable, for instance, to those distinguishing Massachusetts from the District of Columbia. Many of the birds of Fort Yuma and Fort Whipple respectively are total strangers to each other.

Such striking features as are here briefly indicated render the study of the birds of this region specially attractive, and exact information respecting their distribution and movements within the area in question is very desirable. The whole subject is elucidated in detail in the present treatise.

Aside from the local perturbations resulting from topographical and climatic diversity within small areas, the bird-fauna of the Colorado Valley is in a sense homogeneous and rather

compact, being well marked by a large proportion of highly characteristic, if not wholly peculiar, species. The resulting aspect of the bird-fauna is far more strongly pronounced than is ordinarily found to be the case with areas of corresponding dimensions. As might be expected from aridity of such extent and to such degree as is witnessed in the Colorado Valley, the prime mark of the birds of the region is that pallor of coloration which is now well known to result from the combined effects of heat and dryness. It is the extreme of a condition very sensibly offered by the birds of the Great Plains at large. In some cases we here find that the modification of a common stock has produced forms sufficiently distinct from their respective allies to meet the requirements of "species"; while in many more instances strongly marked geographical races are developed by the same natural causes operating less intensely, less continuously, or upon less susceptible material. It is unnecessary in this place to cite examples, as such cases are already well known to ornithologists. It may be added, as a curious fact in the matter of the modifications here witnessed, that the tail is lengthened in many cases of birds which otherwise differ from their respective allies mainly by the bleached coloration just noticed.

A few words upon the progress of our knowledge of the birds of the region under consideration will not be out of place here. It is only within the last twenty-five years that we have acquired any considerable information respecting the ornithology of the Colorado Basin. Shortly after Nuttall and Townsend largely increased our knowledge of Western birds from localities much further north, Dr. William Gambel gave us welcome advices in various papers published by the Philadelphia Academy from 1843 to 1849; and this naturalist may be considered as a pioneer in this field. He was succeeded by Dr. S. W. Woodhouse, who accompanied an expedition to the Zuñi and Colorado Rivers, and prepared a valuable paper published in 1853 in Sitgreaves's Report. Mr. Cassin's well-known "Illustrations", completed in 1856, contain colored figures of many interesting species, and include the timely field-notes of Col. G. A. McCall, Dr. A. L. Heermann, and other naturalists who had made personal observations in the field. A stride forward was taken when the Reports of the Pacific Railroad and Mexican Boundary appeared; the technicalities of the subject being admirably worked out by Professor Baird in these volumes, while the same publications include the field-notes of the naturalists attached to the several

Surveys, as Dr. Heermann, already mentioned, Dr. C. B. R. Kennerly, Mr. J. H. Clarke, Mr. Arthur Schott, and others. Dr. T. C. Henry, then of the Army, published several valuable papers on the birds of New Mexico at about this time, and Dr. J. G. Cooper gained much additional information during his somewhat later residence in Arizona. Much, however, remained to be done when Dr. Coues entered Arizona in 1864, and spent nearly two years in studying the natural history of the Territory. He published in 1866 the first formal list of the birds of Arizona, describing new species and adding others to the fauna of the United States; and his personal experiences, now for the first time set forth in full, afford a large basis of the biographical portion of the present treatise. Lieutenant (now Captain) Charles Bendire, U. S. A., subsequently resided for some time in Southern Arizona, where he made large collections of nests and eggs, and furnished much information respecting the breeding habits of the birds, which was published in part by Dr. Coues, but principally by Dr. T. M. Brewer. By far the most important contributions hitherto offered to the natural history proper of the birds of New Mexico and Arizona are those recently made by Mr. H. W. Henshaw, during his connection with the Engineer Survey West of the 100th Meridian. This accomplished ornithologist has added many new species to the fauna of the United States, and has published the most complete list we possess of the birds of Arizona; while his extensive memoir in the 4to Reports of the Survey mentioned gives us much new information respecting the distribution and the habits of the birds of New Mexico and Arizona.

I may also advert in the present connection to several late publications upon the birds of contiguous regions as bearing upon the special subject. Among these may be mentioned the papers on Texan birds by H. E. Dresser, H. B. Butcher, C. A. H. McCauley, J. C. Merrill, and G. B. Sennett; on those of Colorado by C. E. Aiken and C. H. Holden, and R. Ridgway; to Mr. Henshaw's List of the Birds of Utah; to Dr. Cooper's work on the ornithology of California; to Mr. J. A. Allen's Reconnoissance in Kansas, Colorado, Wyoming, and Utah; and especially to Mr. Ridgway's important memoir on the Ornithology of the Survey of the 40th Parallel.

It is believed that the present volume will be found to be a thorough digest of the information we possess upon the subject.

F. V. HAYDEN,
United States Geologist.

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BIRDS OF THE COLORADO VALLEY

CHAPTER I.—THRUSHES

FAM. TURDIDÆ

THE birds of this family, together with those of the families which follow in this work to the Flycatchers (*Tyrannidæ*), inclusively, belong to the great group of *Passeres*. Any Passerine bird of this country may be recognized by the character of the feet, which are perfectly fitted for grasping—in other words, for *perching* upon such support as the twigs of trees, for instance. Though many kinds of birds, such as Birds of Prey, Herons, and various others that might be mentioned, perch habitually, yet the truly insessorial foot, as exhibited among *Passeres*, is unmistakable in several features. The hind toe, which is never wanting, is inserted on the same level as the front toes collectively; it is always directed straight backward, being thus opposed directly to the front toes; it is of considerable length, and its perfect mobility is secured by the separation of its principal muscle from that one which bends the other toes collectively. The claw of the hind toe is at least as long as that of the middle anterior toe, and often longer. Neither of the front toes is ever reversed in position, to effect such arrangement of the digits in pairs as is witnessed in some Picarian birds, as Woodpeckers, Cuckoos, &c.; nor are the toes ever soldered together for a long distance, as in the Kingfishers; nor are their joints abnormal in number, as in some of the Swifts; nor are the feet webbed or lobed, as in many wading and all swimming birds. In addition to these characters, it may be stated that the legs are clothed with feathers down to the tibio-tarsal joint; and that the tarsus and toes are invested with hard, horny integument, like that encasing the bill. Such a foot as results from these con-

FIG. 1.—Typical Passerine Foot.

ditions is rarely found outside the group *Passeres;* and any non-Passerine bird, the foot of which conforms with the foregoing description, may be recognized by some collateral features. The foot of a Hawk or Owl, for instance, is strictly insessorial in character, and, in fact, possesses very great grasping powers; but the bill of these birds is furnished with a soft cere, which no Passerine bird exhibits. In a Pigeon, with decidedly insessorial feet, the covering of the feet, like that of the bill in part, is soft and skinny, not perfectly horny. A Hummingbird, the foot of which is perfectly insessorial, is ascertained to be non-Passerine by the fact that it has but six wing-quills of the secondary series—all *Passeres* having more than six. And, in general, closely as some of the Picarian birds of this country may resemble the *Passeres*, some peculiarity of the feet will suffice for their recognition. Thus, in the Parrots, Cuckoos, and Woodpeckers, the toes are in pairs, two before and two behind; in the Kingfishers, the toes are extensively soldered together, the covering of the tarsus is rather soft, and, moreover, the tibia is naked below; in the Swifts and Goatsuckers, either the hind toe is elevated above the plane of the rest, or it is turned sideways, or there is a web at the bases of the front toes, or these last have an unusual number of joints, or several of these features occur in combination. Hummingbirds, the only remaining North American *Picariæ*, have, as already said, a nearly Passerine foot; but, in this case, the above-mentioned feature of the secondaries is distinctive.

There is also a peculiarity of the wing of *Passeres* that serves to distinguish birds of this group from those of probably any one of the others, excepting *Picariæ*, and even from the majority of *Picariæ*. In a Passerine bird, the row of "greater" wing-coverts—those that overlie the secondary quills—are not more than half as long as these quills; while in most non-Passerine birds—perhaps in all birds below *Picariæ*—the reverse is the case.

The details of structure of the tarsal envelope of *Passeres* may be noticed in passing. In the majority of the birds of this group, the tarsus is covered on each side with a horny plate, nearly or quite undivided, meeting its fellow in a sharp ridge behind; and, in some cases, this general fusion of the envelope proceeds so far that the front of the tarsus likewise presents a nearly or quite undivided surface, the whole tarsus being then encased in a "boot," as it is called. The more complete con-

ditions of fusion of the envelope—those showing the entire lateral plates, sharp-ridged behind, whether or not the front of the tarsus be also fused—are commonly associated with certain anatomical characters which affect the vocal powers of the birds; there being a complex arrangement of the muscles of the lower larynx. Most of the North American *Passeres* exhibit these features combined, and constitute a minor group *Oscines*, which is denominated a suborder by those who hold *Passeres* as an order. The family of the Larks (*Alaudidæ*) is the only exception among our birds; for here the larynx is a highly-developed vocal organ, while the tarsus shows a different structure of the envelope, being covered on the outer side with two series of scales lapping around before and behind, and having the hinder edge blunt. This state of the tarsus prepares us for the further modification witnessed in a single one of the North American families of *Passeres*, namely, the *Tyrannidæ*, or Fly-catchers, in which the tarsus is blunt behind, being covered with a set of variously-arranged plates lapping entirely around. Such condition, in connection with an incomplete development of the vocal organ, marks off the *Tyrannidæ* as representatives of a second minor group of *Passeres*, called *Clamatores*, in contrast with *Oscines*.

The purpose of these opening paragraphs will have been attained, if enough has been said to enable the reader to gain an idea of the limits, and of certain leading features, of the great group *Passeres*, which includes the majority of all known birds, and something like two-fifths of those of North America.

The families of *Passeres* which occur in the Coloradan region are the *Turdidæ*, *Saxicolidæ*, *Cinclidæ*, *Sylviidæ*, *Chamæidæ*, *Paridæ*, *Sittidæ*, *Certhiidæ*, *Troglodytidæ*, *Alaudidæ*, *Motacillidæ*, *Sylvicolidæ*, *Tanagridæ*, *Hirundinidæ*, *Ampelidæ*, *Vireonidæ*, *Laniidæ*, *Fringillidæ*, *Icteridæ*, and *Corvidæ*, all of which are Oscine, and the *Tyrannidæ*, which is Clamatorial. These will be severally considered in the sequence here indicated.

With these few preliminary considerations touching the *Passeres* at large, we will at once take up the subject of the present chapter, namely, the

Turdidæ, or Thrushes.

CHARS.*—Oscine *Passeres*, in which the characters of this great group are highly developed. Lateral tarsal plates laminar, meeting in a sharp ridge posteriorly; anterior scutella often fused in a continuous lamina. Toes deeply cleft—the outer anterior one to the distal end of its basal joint, the inner anterior almost to its very base. Bill more or less subulate, as usual in insectivorous birds, usually notched near the end, the commissure not angulated, nor very deeply cleft. Nostrils oval, nearly or quite reached but not covered by feathers. Rictus with well-developed bristles. Primaries ten, the first of which is spurious, or short; second shorter than the fourth. Tail-feathers twelve, not stiffened nor acute.

The *Turdidæ* are very closely related both to the *Saxicolidæ* and *Cinclidæ* among American forms, as well as to certain exotic groups—perhaps too closely to justify their separation when all their interrelationships are taken into consideration. Viewing, however, the North American forms alone, very fair diagnostic points may be determined, as will be seen on comparing the characters given in Chapters II. and III.

The vocal apparatus of the Thrushes is highly developed, and some of the members of this family, like the Wood Thrush and Mockingbird, are among the most famous of songsters.

Thrushes are distributed throughout all of temperate North America, as well as most other portions of the globe. Our species are mainly birds of the woodland, though a few kinds enliven with their song the arid and treeless wastes of the Southwestern Territories. A majority of the North American species are represented within the limits of the Coloradan Basin; they may readily be grouped in three subfamilies, the leading antithetical characters of which are as follows:—

TURDINÆ.—Tarsi booted. Bill short, scarcely or not depressed, moderately cleft. Legs stout. Tail-feathers widening a little toward the end, the tail thus becoming squarish or fan-shaped.

MYIADESTINÆ.—Tarsi booted. Bill very short, much depressed, widened at base, deeply cleft. Legs weak. Tail-feathers tapering, the tail being thus rendered somewhat cuneate.

* The characters of this and of other groups are drawn up with reference to the forms treated in the present work, and may or may not require modification in order to their equal applicability to extra-limital representatives.

MIMINÆ.—Tarsi scutellate anteriorly (scales seven in number). Bill variable; sometimes as in *Turdinæ*, sometimes as long as the head and bent like a bow. Legs stout. Wings usually shorter than the tail, which is more or less graduated, with broad, rounded feathers.

Other characters will be adduced under the heads of the respective subfamilies.

SUBFAMILY TURDINÆ: TYPICAL THRUSHES

CHARS.—With the tarsus, in the adult, "booted" or enveloped in a continuous plate, formed by fusion of all the tarsal scutella excepting two or three just above the base of the toes. (This is a strong character; for the few other birds of this country which show the same feature are quite different in other respects.) Wings more or less pointed, longer than the tail; first primary spurious, or very short; second longer than the sixth. Bill moderate, shorter than the head, straight, more or less subulate, little depressed at base, with moderate bristly rictus. Nostrils oval, nearly or quite reached by the frontal feathers. Tail-feathers widening somewhat toward their ends; the tail as a whole somewhat fan-shaped, not decidedly forked at the end, nor much graduated.

FIG. 2.—"Booted" tarsus. (Foot of Robin, natural size. N. B.—The lettering of the cut indicates proportional lengths of tarsus and middle toe with claw, and the numeration of the several digits of a bird's foot.)

This group is nearly cosmopolitan, and reaches a high state of development in the warmer parts of America, where it is represented by various genera and numerous species. There are in all upward of one hundred and fifty accredited species of *Turdinæ*, most of which are referable to the genus *Turdus* and its subdivisions. The United States species are few in number, and all of them belong to the single genus *Turdus;* though species of *Catharus*, an allied form, may possibly be yet found on our southern border.

The Thrushes are generally distributed over North America, in wooded regions, but will not be found, except casually, in those localities which are devoid of trees or bushes, even

though such places are within the general area of distribution of the respective species. They are insectivorous, like most birds, in fact; but, like very many others that feed mainly upon insects, they also eat berries and various other soft fruits. The Robin, for instance, is extravagantly fond of the berries of the common Poke (*Phytolacca decandra*); and, during the season when this fruit is ripe, specimens are often found with not only the plumage, bill, and feet, but also various interior parts of the body, dyed with the purple juice. The Thrushes are migratory in the United States. They are not properly to be considered gregarious, though some of them, like the Robin, go together in troops of hundreds at certain seasons. They are arboreal in general habit; yet much of the time is spent on the ground in the search for worms and insects. To illustrate the case, again, in the instance of the familiar Robin, every one will recall the sprightly excursions of this bird on the green-sward of our parks and gardens during the breeding-season, and remember how swiftly it runs, with lowered head; how it then draws itself up at full length, displaying its trim and shapely form to best advantage; how then, satisfied that no danger is to be apprehended, it tugs at the grub that lurks in the roots of the grass, and finally bears it away to the nest, on a bough of the nearest apple-tree. The mode of nesting varies according to the species; most of the Thrushes build upon trees or bushes, but some, less ambitious, are content to nestle on the ground. The order of their architecture is never elaborate or ornate; the nests, in fact, are rather rude, bulky, and inartistic structures, more notable for strength and stability than for beauty of finish; they are built of leaves, grasses, rootlets, and similar materials, often strengthened with mud. The eggs are usually four, five, or six in number, blue or green in color, with or without reddish spots; some of the most closely-allied species lay eggs distinguishable with as much certainty as the birds themselves. Under favorable circumstances, two, or even three, broods of young may be reared in one season. The great voracity of young insectivorous birds is perhaps in no case more strongly illustrated than in this group. If the Robins were to feed all other seasons exclusively upon the fruits of the orchard and garden, we should still remain in their debt for the numberless thousands of noxious insects they destroy during the period when they are rearing their young. The destruction of such useful birds cannot be too severely reprobated,

even upon selfish grounds, to say nothing of the higher and more generous motives which should suffice for their protection. For we are not alone indebted to the Thrushes as friends favoring our economical projects. They lay strong claim to our regard as musicians. It is true that the song of the Robin is a humble effort, remarkable for nothing so much as for its heartiness, simplicity, and persistence; yet some of the Thrushes, like the Hermit and the Wood Thrush, sing with wonderful power and effect.

Genus TURDUS Linn.

THE characters of the single genus represented in North America being in effect the same as those of the subfamily already given, need not be recapitulated. The several species to be treated fall in three groups, or subgenera, which may be thus analyzed:—

Planesticus.—Sexes similar. Bill notched near the end, little widened at base. Tarsi little longer than the middle toe and claw. Beneath mostly unicolor, with streaked throat. Large; stout.

Hesperocichla.—Sexes dissimilar. Bill unnotched. Male with a black pectoral collar. Otherwise like *Planesticus.*

Hylocichla.—Sexes similar. Bill notched near the end, much widened and depressed at base. Tarsi decidedly longer than the middle toe and claw. Beneath spotted. Of small stature, and rather slender form.

It may be remarked that the first plumage of young birds is spotted, in this genus; and that the tarsal scutella are only fused completely in adult life.*

All of the North American species of this genus occur in the Coloradan region excepting one, the Wood Thrush, *T. mustelinus.* While there will be no difficulty in recognizing the species of *Planesticus* and of *Hesperocichla*, the smaller species of *Hylocichla* require careful discrimination, nor are ornithologists agreed upon the more correct view to be taken of their interrelationships. Four species are distinct, beyond question: *T. mustelinus*, *T. fuscescens*, *T. swainsoni*, and *T. pallasi;* but

* This latter subject is well illustrated by Dr. J. J. Kaup, in an article entitled "Ueber die Bedeckung der Fusswurzel des Turdus migratorius", in: Arch. für Naturg., sechszehnter Jahrg. Bd. I. ss. 42, 43, hierzu Taf. ii, Fig. 1-5.

some other forms which have been admitted to be specific are not so well established. It may be further observed that several of the names now currently adopted may have to give way, in the end, if the species described by some of the older authors, as Pennant, Latham, Gmelin, and Pallas, can be fully identified. On the present occasion, however, I shall adopt the usual nomenclature.

The Robin

Turdus (Planesticus) migratorius

Turdus migratorius, *Linn.* SN. i. 1766, 292.—*Forst.* Phil. Tr. lxii. 1772, 382, 399.—*Gm.* SN. i. 1788, 811.—*Lath.* IO. i. 1790, 330.—*Turt.* SN. i. 1806, 492.—*Vieill.* OAS. ii. 1807, 5, pls. 60, 61.—*Wils.* AO. i. 1808, 35, pl. 2, f. 2.—*Bp.* Journ. Phila. Acad. iv. 1834, 25; Ann. Lyc. N. Y. ii. 1826, 75; Syn. 1828, 75.—*Fox,* Newc. Mus. 1827, 150.—*Doughty's* Cab. NH. i. 1830, 133, pl. 12.—*Less.* Tr. Orn. 1831, 408.—*Brehm,* Hdbh. VD. 1831, 388.—*Nutt.* Man. i. 1832, 338, fig. —; 1840, —.—*Kittl.* Kupfert. iii. 1833, 21, pl. 25, f. 2.—*Aud.* OB. ii. 1834, 190; v, 1839, 442; pl. 131; Syn. 1839, 89; BA. iii. 1841, 14, pl. 142.—*Temm.* Man. iii. 1835, 91.—*Bp.* PZS. 1837, iii.—*Bp.* C. & GL. 1838, 17.—*Peab.* Rep. Orn. Mass. 1839, 303.—*Vig.* Voy. Bloss. 1839, 17.—*Towns.* Journ. Phila. Acad. viii. 1839, 153.—*Giraud,* BLI. 1844, 86.—*Gamb.* Proc. Acad. Phila. iii. 1846, 113.—*Thiene.* Rhea, i. 1846, 125 (Vienna).—*Homey.* Rhea, ii. 1849, 158 (Europe).—*Bp.* CA. i. 1850, 272.—*Naum.* Naum. iv. 1851, 7 (Germany).—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Cab.* Naum. ii. 1852, 122 (Germany).—*Cabot,* Naum. iii. 1852, 65.—*Thomps.* Vermont, 1853, 79, fig. —.—*Read,* Pr. Phila. Acad. vi. 1853, 398.—*Hoy,* Pr. Phila. Acad. vi. 1853, 310.—*Woodh.* Sitgreave's Rep. 1853, 72.—*Cab.* J. f. O. 1853, 67 (Germany).—*Brew.* Pr. Bost. Soc. iv. 1854, 325.—*Pratten,* Tr. Illinois Agr. Soc. 1855, 601.—*Kennic.* Tr. Illinois Agr. Soc. 1855, 582.—*Henry,* Pr. Phila. Acad. vii. 1855, 310.—*Haym.* Pr. Phila. Acad. viii. 1856, 288.—*Putn.* Pr. Essex Inst. i. 1856, 209.—*Scl.* PZS. 1856, 294.—*Newb.* PRRR. vi. 1857, 81.—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Bry.* Pr. Bost. Soc. vi. 1857, 116.—*Scl.* PZS. 1857, 126; 1858, 300.—*Maxim.* J. f. O. 1858, 178.—*Treadw.* Pr. Bost. Soc. vi. 1858,396.—*Scl.* PZS. 1859, 225, 331, 362.—*Gosse,* Alabama, 1859, 295.—*Xantus,* Pr. Phila. Acad. xi. 1859, 190.—*Willis,* Smithson. Rep. for 1858, 1859, 281.—*Heerm.* PRRR. x. pt. iv. 1859, 190.—*Martens,* J. f. O. 1859, 213.—*Tomes,* Ibis, 1859, 387.—*S. & S.* Ibis, 1860, 396.—*Coop. & Suckl.* NHWT. 1860, 172.—*Bd.* Ives' Rep. 1861, 5.—*Barn.* Smithson. Rep. for 1860, 1861, 435.—*Scl.* Ibis, 1861, 282.—*Blak.* Ibis, 1862, 4.—*Tayl.* Ibis, 1862, 128.—*Gund.* J. f. O. 1862, 181.—*Board.* Pr. Bost. Soc. ix. 1862, 124.—*Verr.* Pr. Bost. Soc. ix. 1862, 137.—*Verr.* Pr. Essex Inst. iii. 1862, 145.—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 159.—*Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 57.—*Blak.* Ibis, 1863, 59.—*Bd.* Rev. AB. 1864, 28.—*Scl.* PZS. 1864, 172.—*Dress.* Ibis, 1865, 475.—*Hoy,* Smithson. Rep. for 1864, 1865, 437.—*Weiz,* Pr. Bost. Soc. x. 1866, 267.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 281.—*McIlwr.* Pr. Essex Inst. v. 1866, 84.—*Degl.-Gerbe,* OE. i. 1867, 406.—*Sam.* BNE. 1867, 154.—*Brown,* Ibis, 1868, 420.—*Coues,* Pr. Bost. Soc. xii. 1868, 107.—*Coues,* Pr. Phila. Acad. xx. 1868, 82.—*Butch.* Pr. Phila. Acad. xx. 1868, 149.—*Coues,* Am. Nat. ii. 1868, 161.—*Hughes,* Am. Nat. ii. 1868, 490.—*Garlick,* Am. Nat. ii. 1868, 492.—*Coues,* Pr. Essex Inst. v. 1868, 265.—*Allen,* Am. Nat. iii. 1869, 573.—*Coop.* Am. Nat. iii. 1869, 31, 297.—*Dall & Bann.* Tr. Chicago Acad. i. 1869, —.—*Turnb.* B. E. Pa. 1869, 22; Phila. ed. 15.—*Dall,* Am. Nat. iv. 1870, 600.—*Coop.* B. Cal. i. 1870, 7, fig. —.—*Mayn.* B. Mass. 1870, 89.—*Coues,* Pr. Phila. Acad. xxiii. 1871, 19.—*Stevens,* U. S. Geol. Surv. Terr. for 1870, 1871, 463.—*Allen,* Bull. MCZ. 1871, 250.—*Trippe,* Pr. Essex Inst. vi. 1871, 115.—*Bruhin,* Zool. Gart. xii. 1871, 12.—*Mayn.* B. Fla. 1872, 1.—*Coues,* Key, 1872, 71, f. 13.—*Allen,* Bull. MCZ. 1872, 173.—*Drew,* Am. Nat. vi. 1872, 52.—*Wood,* Am. Nat. vi. 1872,

173.—*Lockw.* Am. Nat. vi. 1872, 770.—*Hold.* Pr. Bost. Soc. xv. 1872, 193—*Mayn.* Pr. Bost. Soc. xv. 1872, 357.—*Scott*, Pr. Bost. Soc. xv. 1872, 220.—*Trippe*, Pr. Bost. Soc. xv. 1873, 234.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 712.—*Ridg.* Bull. Essex Inst. v. 1873, 179.—*Snow*, B. Kansas, 1873, 3.—*Coues*, Prybilov. Is. 1873, app. —; 8vo ed. 1875, 172; Harting ed. 1875, 16.—*Boyce*, Am. Nat. viii. 1874, 203.—*Eds.* Am. Nat. viii. 1874, 271.—*Comstock*, Am. Nat. viii. 1874, 76.—*Coop.* Am. Nat. viii. 1874, 16.—*Ridg.* Am. Nat. viii. 1874, 178.—*Merrill*, Am. Nat. viii. 1874, 547.—*Allen*, Pr. Bost. Soc. 1874, 45, 48.—*Coues*, BNW. 1874, 1, 228.—*Coues*, Checkl. 1874, No. 1.—*Allen*, Pr. Bost. Soc. xvii. 1874, 48.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 365.—*Hensh.* Ann. Lyc. N. Y. x. 1874, 2.—*Hensh. & Yarr.* Rep. Wheeler's Exp. 1874, 5, 39, 56, 70, 96.—*Hensh.* Zool. Wheeler's Exp. 1875, 143 (in press).—*Ridgw.* Zool. 40th Par. 187–, 9 (in press).—*Boies*, Cat. B. Michigan, 1875, —.—*Nels.* Pr. Bost. Soc. xvii. 1875, 338, 345, 349, 355.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.

Turdus megratorius, *Bodd.* Tabl. PE. 1783, 32, pl. 556, f. 1.

Turdus migratorius var. **migratorius,** *Bd. Br. & Ry.* NAB. i. 1874, 25, pl. 2, f. 2.

Turdus (Planesticus) migratorius, *Bd.* BNA. 1858, 218.—*Coues*, Pr. Phila. Acad. 1861, 218.—*Allen*, Pr. Essex Inst. iv. 1864, 58.—*Coues*, Pr. Phila. Acad. 1866, 64.—*Merr.* U. S. Geol. Surv. for 1872, 1873, 670.

Planesticus migratorius, *Henry*, Pr. Phila. Acad. 1859, 106.—*Coues*, Ibis, 1865, 163.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713; Am. Nat. viii. 1874, 7, 8, 86.—*Gundl.* J. f. O. 1872, 405.

Merula migratoria, *S. & R.* FBA. ii. 1831, 176.—*Wailes*, Rep. Miss. 1854, 318.—*Gould*, BE. pl. 74.

Turdus canadensis, *Briss.* Orn. ii. 1760, 225, No. 9.—*Müll.* SN. Suppl. 1776, 140.

Turdus pilaris migratorius, *Kalm.* iii. 46.

Fieldfare of Carolina, *Catesby*, Car. i. pl. 29.

Litorne de Canada, *Buff.* Ois. iii. 307.

Grive de Canada, *Buff.* PE. 556. f. 1.

American Fieldfare, *Forst.* Phil. Tr. lxii. 1772, 399.

Red-breasted Thrush, *Penn.* AZ. ii. 1785, 335, No. 196.—*Lath.* Syn. ii. —, 26, No. 12.

Merle Erratique, *Temm.* Man. iii. 1835, 91.—*Degl.-Gerbe*, OE. i. 1867, 406.

Merle ou Rouge-gorge du Canada, *Le Moine*, Ois. Canad. 1861, 164.

Migratory Thrush; American Redbreast; American Robin; Robin Redbreast; Robin, *Vulgo.*

Var.

Turdus confinis, *Bd.* Rev. AB. 1864, 29.—*Coop.* B. Cal. i. 1870, 9.—*Elliot*, BNA. —.—*Merrill*, Am. Nat. viii, 1874, 547.

Turdus migratorius var. **confinis,** *Coues*, Key, 1872, 72.—*Bd. Br. & Ry.* NAB. i. 1874, 27, pl. 2, f. 1.

HAB.—North and Middle America; Greenland; some of the West India Islands; Europe, accidentally.

CH. SP.—♂ ♀. *Olivaceo-schistaceus, capite caudaque nigricantibus, alis fuscis cinereo-marginatis, gastræo subaxillaribusque castaneis, gula albo-striata, palpebris, tibiis crissoque albis, rostro flavo.*

♂ in summer: Upper parts slate-color, with a shade of olive. Head black, the eyelids and a spot before the eye white, and the throat streaked with white. Quills of the wings dusky, edged with hoary ash, and with the color of the back. Tail blackish, the outer feather usually tipped with white. Under parts, to the vent, including the under wing-coverts, chestnut. Under tail-coverts and tibiæ white, showing more or less plumbeous. Bill yellow, often with a dusky tip. Mouth yellow. Eyes dark brown. Feet blackish, the soles yellowish. Length about 10 inches; extent about 16; wing, 5–5½; tail, 4–4½; bill, ⅝; tarsus, 1¼; middle toe and claw about the same.

♀ in summer: Similar to the ♂, but the colors duller; upper parts rather olivaceous-gray; chestnut of the under parts paler, the feathers skirted with gray or white; head and tail less blackish; throat with more white. Bill much clouded with dusky.

♂ ♀ in winter and young: Similar to the adult female, but receding somewhat farther from the ♂ in summer by the duller colors, the paleness and restriction of the chestnut, with its extensive skirting with white, lack of distinction of the color of the head from that of the back, tendency of the white spot before the eye to run into a superciliary streak, and dark color of most of the bill.

Very young birds have the back speckled, each feather being whitish centrally, with a dusky tip, and the cinnamon of the under parts is spotted with blackish. The greater coverts are tipped with white or rufous, frequently persistent, as are also some similar markings on the lesser coverts.

Albinos, partial or complete, of this species are of comparatively frequent occurrence.

In specimens bred in the Colorado Basin and other portions of the Southwest, there is a tendency to greater length of the tail; this member averaging in length nearly at the maximum of that of Eastern specimens. With this is coupled the reduction or extinction of the white spot on the exterior tail-feathers.

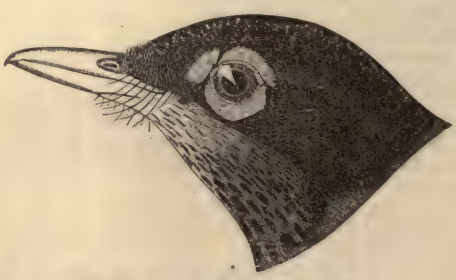

FIG. 3.—Head of Robin, natural size.

THE Robin is found in all parts of North America. It also occurs in Greenland, on islands in Bering's Sea, on several of the West India islands, as Bermuda, Cuba, and Tobago; and through Mexico to Guatemala. It has even been known to cross the Atlantic, having been several times shot in Europe.* Such general statement of its distribution requires little if any qualification. For, though it is a woodland bird, like all of its tribe, and therefore scarcely to be found in certain portions of the country, where desert or prairie fail to afford requisite con-

* In the above synonymy, numerous European references are given, which must not be presumed, however, to indicate as many different instances of its occurrence, since several may relate to the same case. Dr. Cabanis supposes the individual taken in Germany in December, 1851, to have reached that country via Siberia, not by crossing the Atlantic.

ditions; nevertheless, in the course of its extensive migrations, it may at least pass over such tracts. Thus I have observed large flocks in the open and sterile portions of Dakota and Montana—flocks that were journeying across the country, and had stopped for rest and food in the fringe of trees along the lesser water-courses.

It is not easy to determine the center of abundance of so widely diffused a bird as the Robin. Excluding the extremes of its range, reached by comparatively few individuals, such as Greenland, the West Indies, or Central America, its numbers appear to be determined solely by the food-supply. Since settlement of the country and cultivation of the soil result in an increase of its favorite articles of diet, it is nowhere more numerous than in populous districts. In the Southwest, it appears to be becoming more abundant than it formerly was, doubtless in direct consequence of the progress of civilization. All the recent observers who have recorded their experience agree in their representations to this effect. In any given locality, short of the extremes of its range, the bird appears to be more abundant during the migration—especially the autumnal movement—than at other seasons. This may be due to two causes. In the first place, there is an actual increase in number by new arrivals; and, secondly, the birds collect together in large companies, and become in consequence more conspicuous than they are when generally dispersed. In some regions, where trees are few and far between, as in an instance already cited, Robins will rarely be seen except in the spring and fall. In intermediate portions of the United States, they seem to be most numerous early in the spring, and in the latter part of autumn, when straggling flocks of hundreds roam through favorite tracts of woodland and shrubbery, or betake themselves to the neighboring fields.

The Robin is strictly a migratory bird, like most insectivorous species which inhabit the northern hemisphere. There is a general north and south movement of the species as a whole, during the changing seasons of the year—a movement directly related to the sources of food-supply. Nor should it be inferred from the fact that Robins may be seen in a given locality during the whole year, that the tide of migration has not passed; for it may be that the individuals present at one season are not the same as those that remained during a previous period of the year. The fact appears to be, that, as a

rule, at least, there is a replacing of one set of individuals by another; so that, though the bird as a species may be resident, the birds individually have obeyed the migratory impulse. Wide as the Robin's distribution is, the limits of its summer and winter residences are comparatively little narrower. Its breeding-range extends from Arctic America to the Alpine regions of Mexico; its winter home, from the Northern States to Central America. It is a hardy bird, capable of enduring cold to the freezing-point of mercury. Thus, it will be seen, the bird is "resident" in one sense throughout the greater portion of its range. Nevertheless, the general migration favors its presence in greatest numbers in the Southern States during winter, and in the Northern during the summer.

The Robin is a great eater of berries and soft fruits of every description; and these furnish, during the colder portions of the year, its chief sustenance. Some of the cultivated fruits of the orchard and garden are specially attractive; and no doubt the birds demand their tithe. But the damage done in this way is trifling at most, and wholly inconsiderable in comparison with the great benefit resulting from the destruction of noxious insects by this bird. The prejudice which some persons entertain against the Robin is unreasonable; the wholesale slaughter of the birds which annually takes place in many localities is as senseless as it is cruel. Few persons have any adequate idea of the enormous—the literally incalculable—numbers of insects that Robins eat every year. It has been found, by careful and accurate observations, that a young Robin, in the nest, requires a daily supply of animal food equivalent to considerably more than its own weight! When we remember that some millions of pairs of Robins raise five or six young ones, once, twice, or even three times a year, it will be seen that the resulting destruction of insects is, as I have said, simply incalculable. I have no doubt that the services of these birds, during the time they are engaged in rearing their young alone, would entitle them to protection, were the parents themselves to feed exclusively upon garden-fruits for the whole period. But at this time the diet of the old birds is very largely of an animal nature; nor is this the only season during which the destruction of insects goes on. Upon the first arrival of the main body of the birds early in the spring, long before any fruits are ripe, they throw themselves into newly-plowed fields, and scatter over meadows, lawns, and parks, in eager

search for the worms and grubs that, later in the season, would prove invincible to the agriculturist, were not their ravages thus stayed in advance by the friendly army of Robins.

It is a matter of congratulation that the good services of the Robin are becoming duly appreciated—thanks to the timely and judicious interference in its behalf on the part of many of its friends; among whom no one, perhaps, deserves higher praise for his active and successful exertions than Dr. Thomas M. Brewer, of Boston. The bird is now very generally protected by legislative enactments, during a portion of the year at least; it is to be hoped that the laws may be made still more stringent, and the "close" time become co-extensive with the year itself. As an object of "sport," the Robin can possess no attractions save to idle children of larger or smaller growth; while its commercial value, as an article of food, is wholly inconsiderable. There are, therefore, weighty and cogent reasons why the Robin should be protected by law at all seasons; for there would rarely if ever be difficulty in gaining permission, upon proper representation, to destroy the very few that might be required for scientific purposes, or to please the capricious palate of an invalid.

There is little need to pursue the history of the Robin to the details of the bird's daily life; upon such points the children are competent ornithologists; and those of us who may have forgotten our early experiences need only look out of the window at the right time. A word of record respecting the nest, may, however, not be out of place. This is one of the most conspicuous pieces of bird-architecture about the homestead—the Kingbird's, the Oriole's, and the various Swallows' nests alone approaching it in this respect. The horizontal bough of an orchard tree, not far from the ground, is a favorite situation; though the Robin is not very particular, and will sometimes build, like the Pewit Flycatcher, in odd and unsuspected nooks about an out-building. The nest is too bulky for concealment, and no art is attempted. A mass of the most miscellaneous material, chiefly of vegetable nature, such as leaves, weed-stems, moss, grasses, and rootlets, but sometimes including hair or wool, surrounds a rather neat cup of mud, which in turn is lined with finer vegetable fiber. The shape of the nest varies, of course, with the character of the support upon which it rests; in size it is about five inches wide, or deep, with a cavity half as large, the walls and flooring being

very thick and substantial. Such nests do not readily yield to the weather. The eggs, numbering five on an average, perhaps, measure from an inch and one-eighth to an inch and one-fourth in length by three-fourths to four-fifths in breadth. When fresh, they are of a uniform, rich, greenish-blue color, without spots; after being blown for some time, especially if exposed to the light, they fade considerably, becoming of a lighter greenish, with less blue shade.

Varied Thrush

Turdus (Hesperocichla) nævius

Varied Thrush, *Penn.* AZ. ii. 1785, 337, No. 197, pl. 15.

Spotted Thrush, *Lath.* Syn. ii. pt. i. 27, No. 13.

Turdus naevius, *Gm.* SN. i. pt. ii. 1788, 817, No. 59.—*Lath.* IO. i. 1790, 331, No. 13.—*Kittl.* Kupfert. iii. 1833, 21, pl. 25, f. 1.—*Bp.* CA. i. 1850, 271.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438 (Mass.).

Turdus nævius, *Turt.* SN. i. 1806, 497.—*Vieill.* OAS. ii. 1807, 10.—*Bp.* C. & GL. 1838, 17.—*Aud.* OB. iv. 1838, 489; v. 1839, 284, pls. 369, 433.—*Aud.* Syn. 1839, 89.—*Ornith. Comm.* Journ. Phila. Acad. vii. 1839, 193.—*Vig.* Zool. Voy. Bloss. 1839, 17.—*Aud.* BA. iii. 1841, 22, pl. 143.—*Gamb.* Pr. Phila. Acad. iii. 1846, 113 (California).—*Gamb.* Journ. Phila. Acad. i. 1847, 42.—*Cabot,* Proc. Bost. Soc. iii. 1848, 17 (New Jersey).—*Lawr.* Ann. Lyc. N. Y. v. 1852, 221 (New York).—*Scl.* PZS. 1857, 4.—*Newb.* PRRR. vi. 1857, 81.—*Heerm,* PRRR. x. pt. iv. 1859, 45.—*Xantus,* Pr. Phila. Acad. xi. 1859, 190 (California).—*Scl.* PZS. 1859, 331.—*C. & S.* NHWT. 1860, 172.—*Bd.* Ives' Rep. pt. v. 1861, 5 (Colorado River).—*Scl.* Ibis, 1861, 282.—*Blak.* Ibis, v. 1863, 59.—*Bd.* Rev. AB. 1864, 32.—*Allen.* Pr. Essex Inst. v. 1864, 82 (New Jersey).—*Lord,* Pr. Arty. Inst. Woolw. iv. 1864, 1 4.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 281 (Long Island).—*Coues.* Pr. Essex Inst. v. 1868, 312 (Ipswich, Mass).—*Brown.* Ibis, 1868, 420 (Vancouver).—*Dall. & Bann.* Tr. Chicago Acad. i. 1869, 276 (Alaska).—*Turnb.* B. E. Pa. 1869, 52; Phila. ed. 41 (New Jersey).—*Coop* Am. Nat. iii. 1869, 31 (Cœur d'Aleñe Mts., Montana); *ibid.* 75.—*Allen,* Am. Nat. iii. 1869, 512, 513, 572 (Ipswich, Mass., Dec., 1864).—*Allen.* White's Geol. of Iowa, 1870, ii. 419 ("Iowa").—*Dall.* Am. Nat. iv. 1870, 600.—*Mayn.* Guide, 1870, 89 (Ipswich, Mass.).—*Coop.* B. Cal. i. 1870, 10.—*Coues,* Key 1872, 72.—*Coues,* BNW. 1874, 1.—*Bd. Br. & Ry.* NAB. i. 1874, 29, f. —pl. 2, f. 2.

Turdus (Ixoreus) naevius, *Bd.* BNA. 1858, 219.

Turdus nævia, *Towns.* Journ. Phila. Acad. viii, 1839, 153.

Turdus (Hesperocichla) nævius, *Coues,* Pr. Phila. Acad. 1866, 65 (Arizona).

Turdus auroreus, *Pall.* ZRA. i. 1831, 448, No. 87 (♀ *aut juv.* Kodiak). [Cf. *Cab.* J. f. O. 1872, 157.]

Orpheus meruloides, *S. & R.* FBA. ii. 1831, 187, pl. 38 (Fort Franklin).

Mimus meruloides, *Less.* Rev. Zool. iii. 1840, 273.

Columbia Robin, *Lewis & Clarke,* Trav. 1st Am. ed. ii. 1814, 185.

Thrush-like Mock-bird, *S. & R. l. c.*

CH. SP.—♂ *Schistaceus, subtus aurantio-rufus, torque pectorali nigro; palpebris, strigâ postoculari, fasciis binis alaribus, necnon maculis remigum aurantio-rufis; remigibus rectricibusque nigricantibus, crisso rectricibusque exterioribus albo-notatis: rostro*

nigro; pedibus subflavis. ♀ *olivaceo-plumbeus, alis caudaque concoloribus, torque angusto dorso concolore; gastræo dilutiore.*

♂, in summer: Entire upper parts dark slate-color, varying in shade from a blackish to a plumbeous slate, in less perfect specimens with a slight olive tinge; wings and tail blackish, with more or less of plumbeous or olive shade, according to the age of the quills; wing-coverts, greater and lesser, tipped with orange-brown forming two cross-bars, and quills edged in two or three places with the same; quills also white at base on the inner webs, this marking not visible from the outside; one or several of the lateral tail-feathers tipped with white. A broad black collar across the breast, mounting on the side of the neck and head. Stripe behind the eye, lower eyelid, and under parts orange-brown, gradually giving way to white on the lower belly; vent and crissum mixed white, orange-brown, and plumbeous. Bill black; feet and claws dull yellowish. Length, 9½–10 inches; extent about 16; wing, 5; tail, 3¾; bill, ⅞; tarsus, or middle toe and claw, 1¼.

♀, in summer: Upper parts olivaceous-plumbeous (almost exactly the shade of the common Robin in winter); wings and tail scarcely darker; the pectoral collar narrow, like the back in color; other under parts like those of the male, but duller, paler, and rather rusty than orange-brown, with more white on the lower belly. Markings of head, tail, and wings exactly as in the male.

Young: Like the adult female. Upper parts in many cases with a decided umber-brown wash. No speckled stage, like that of the very young Robin, has been observed, though August specimens have been examined. In the young male, the black pectoral bar is at first indicated by interrupted blackish crescents on individual feathers. Young females sometimes show scarcely a trace of the collar. At all ages, the markings of the head and wings are much the same.

In winter: January and December examples from Southern California examined differ in no wise from summer specimens of the corresponding sexes.

This bird is about the size of the common Robin, and not very dissimilar in general appearance, though the black necklace and orange wing-markings distinguish it at a glance. The color of the under parts sometimes approaches that of the Robin, but is never of the pure chestnut shade—it is much as in the Black-headed Grosbeak, *Goniaphea melanocephala*. The tail is notably shorter than in the Robin, and the bill lacks the notch at the end; the bill is more compressed, with a straighter culmen, and the bristles at its base are more highly developed. The species appears to be subject to little variation, chiefly affecting the purity and intensity of the colors.

THOUGH the Varied Thrush has been nominally known to naturalists for a century, it is only within the last few years that we have gained any considerable knowledge of its habits. The nest and eggs, in particular, have but recently come to light. The bird was discovered at Nootka Sound, on Captain Cook's third voyage; the specimens passed into the possession

of Sir Joseph Banks, and were described both by Latham and by Pennant; the latter also giving a figure of the male. "Varied Thrush" and "Spotted Thrush" were the names bestowed by these writers, upon whose accounts Gmelin, in 1788, based his *Turdus naevius*. In 1831, Swainson figured and accurately described the species under the name of *Orpheus meruloides*, given, however, in opposition to the prime rule of nomenclature, for no better reason than that such designation appeared to him to be more expressive. These two terms are the only ones to be found in current quotations; a third, however, is to be added; for Pallas received from Kodiak, through his friend Billings, specimens of the same species, to which he applied the name of *Turdus auroreus*. That he had no other bird in view will be evident upon consideration of the description given in the Zoographia Rosso-Asiatica; all the terms of that account being in strictness applicable to the female or immature male, in which the black pectoral collar is incomplete.

Neither of the earlier authors mentioned gave any account of the bird's habits. Pallas merely remarks that it was often killed on the island of Kodiak, where it remains all winter; that it begins to sing late in March, nests on the ground among bushes, and lays four or five eggs. Sir John Richardson's specimen, figured in the Fauna Boreali-Americana, was procured at Fort Franklin, latitude 65° 30′, in the spring of 1826. The bird is said by this author to nest in bushes, like the common Robin, but no further information is given. Two American naturalists, Thomas Nuttall and J. K. Townsend, gave the next glimpses of the life of this bird. Mr. Nuttall observed that it reached the Columbia River in October, and remained in some numbers through the winter; "at this time," says he, "they flit through the forest in small flocks, frequenting usually low trees, on which they perch in perfect silence, and are at times very timorous and difficult of approach, having all the shy sagacity of the Robin." Mr. Townsend's notice is to a similar effect; but, in addition, he states that the voice of the bird is different from that of the Robin, being louder, sharper, and quicker, and alludes to a pleasant song which the bird utters in the spring, just before it sets out on its northern journey. Audubon's account is almost entirely made up of quotations from the three authors last mentioned.

In Oregon and Washington Territories, Drs. Cooper and

Suckley appear to have had excellent opportunities of studying the habits of this species. The former remarks, in the Natural History of Washington Territory:—"The varied thrush or western robin is common during winter, and I think that a few remain near the coast all summer, as I have seen them in the dark spruce forests in June and July. They are much more shy and retiring than the robin, and differ very much in song, which, as I have heard it, consists only of five or six notes in a minor key, and in a scale regularly descending. It is commonly heard in the tops of the trees, and in summer only in the densest of forests. In winter they associate with the robins, and feed much on the ground, sometimes coming around houses in cold weather." Dr. Suckley continues with his observations, in the same volume:—"In winter it is a shy bird, not generally becoming noticeable in the open districts until after a fall of snow, when many individuals may be seen along the sand beaches near salt water. They are at such times tame and abundant, at least sufficiently so for any ordinary shot to obtain a dozen specimens in a forenoon. I suppose that they are driven out of the woods during the heavy snows by hunger. It may then frequently be found in company with the common robin, with which it has many similar habits. . . . At this time of the year it is a very silent bird, quite tame, allowing near approach; flying up when the intruder comes too near, but alighting on the ground again a short distance in front. It appears to be fond of flying by short stages in a desultory manner, sometimes alighting on the ground; at others on fences, bushes or trees. The settlers here (at Port Townsend) call them spotted, painted, and golden robins. The most conspicuous mark on the bird which strikes the eye at first is the black crescent on the fore part of the breast."

Never having myself met with the Varied Thrush, I have presented the principal accounts which have reached us respecting its general habits and manners. Its nest and eggs remain to be noticed, and its geographical distribution to be traced.

Mr. W. H. Dall, to whose important researches we are indebted for a decided increase in our knowledge of the birds of Alaska, found the Varied Thrush nesting at Nulato, May 22d, and gave us our first information on this special subject. A nest which he found was built in a willow-bush, about two feet from the ground, on a mass of *débris* which had lodged during an overflow of the river. Its shape, as described by Dr.

Brewer, may not have been natural, for that author remarks that it probably had been flattened in transportation. This nest was composed of "fine dry mosses and lichens impacted together, intermingled with fragments of dry stems of grasses". A second nest, obtained in Alaska by Dr. Minor, is described by Dr. Brewer in the same connection:—"It is a much more finished structure. Its base and periphery are composed of an elaborate basket work of slender twigs. Within these is an inner nest consisting of an interweaving of fine dry grasses and long gray lichens." There is thus seen to be the usual variation in the materials employed by this Thrush in the construction of its nest; but it is worthy of note that no mud enters into its composition, contrary to the surmise of Audubon that the structure might resemble that of the Robin in this respect. The position of the nest, at least in Alaska, seems to be more constant; for, in the several cases which came under Mr. Dall's observation, the nests were close to the river's bank, in secluded places, and low in situation. The eggs are about one and an eighth of an inch long by four-fifths broad; in color, they are light greenish-blue, distinctly speckled with dark umber-brown.

Our knowledge of the geographical distribution of this species was for many years restricted to the immediate region in which the bird was discovered; it was subsequently extended eastward to Great Bear Lake and southward to Oregon. It is only recently that information has been secured of such southward extension of its habitat that I am enabled to include the species among the birds of the Colorado Basin. Its presence in Southern California is attested by several observers. Mr. Xantus procured it at Fort Tejon, and Professor Baird, in Lieutenant Ives's Report of the Exploration of the Colorado, notes a specimen from Fort Yuma, which fixes the southernmost point on record to date. But its presence so far south as this, and at the same time at such slight elevation, is perhaps fortuitous; certainly, neither Dr. Cooper nor myself nor any of the ornithologists who have latterly visited Arizona found it in this Territory. In various portions of Middle California, however, Dr. Cooper has observed the bird, and to some extent traced its movements. He remarks that it merely visits the lower country of California in winter, and that he had not seen it himself south of the Coast range near Santa Clara, and even there no later than April. "It is very probable, however," he

continues, "that some breed in the dark evergreen forests toward the north, as they do near the mouth of the Columbia, though I did not see any about the summits of the Sierra Nevada, in September, at lat. 39°, elevation 7,000 feet. In October, they begin to come down to the valleys, and are quite common in winter near San Francisco."

To the foregoing indication of the normal range of the species, namely, along the whole Pacific region from Bering's Straits to Southern California, I have only to add the record of its singular wanderings; for the Varied Thrush, like the Evening Grosbeak, Lark Finch, Arkansan and Fork-tailed Flycatchers, and some other distinctively western birds, has occasionally crossed the continent. The earliest instance of such erratic movement which has come to my knowledge is that given by Dr. Samuel Cabot, who records the capture of a specimen in New Jersey. This individual, having been secured in the Boston market, has since been more than once mentioned in published records as having occurred at or near Boston; but, as Dr. Cabot states explicitly, it was shot in New Jersey. Nevertheless, the Varied Thrush has actually appeared in Massachusetts, and not far from Boston either; a specimen having been taken in December, 1864, at Ipswich, Mass., as recorded by Mr. Allen, Mr. Maynard, Dr. Brewer, and myself, in our several papers above cited, all of which refer to this single occurrence. This individual is said to be now preserved in the collection of the Boston Society of Natural History. Mr. George N. Lawrence, in his List of the Birds of New York, Long and Staten Islands, marks the Varied Thrush as "rare", without further comment; and, in Baird, Brewer, and Ridgway's work, a Long Island specimen is said to be in Mr. Lawrence's cabinet. On writing to Mr. Lawrence for the particulars of this case, I am favored with the following items:— "Besides Cabot's New Jersey example, two others have been procured near New York city—one at Islip, Long Island, shot in the fall, in company with robins, and now in the possession of the person who secured it, the other at Hoboken, New Jersey. Both were received in the flesh by Mr. J. Akhurst, to be mounted; the Hoboken one was subsequently destroyed by fire in the taxidermist's workshop. All the specimens in my own cabinet came from the Pacific side."

Thus it appears that there have been four authentic instances of the occurrence of the Varied Thrush on the Atlantic sea-

board—all within a very limited area: the original New Jersey one, *teste Cabot*, sometimes wrongly accredited to Boston; the Ipswich one, December, 1864, *Maynard;* the Islip, L. I., one, *teste* Lawrence; the Hoboken, N. J., one, *teste* Lawrence. There is yet another, making the fifth, record of eastward deviation from ordinary lines of migration; namely, that given by Mr. J. A. Allen in Prof. C. A. White's Geology of Iowa. This, however, Mr. Allen himself informs me, is not authentic, he having merely introduced the species in his compiled list of the Birds of Iowa on the strength of its having been found still farther eastward, and no specimen being known to have been actually found in that State.

Hermit Thrush

Turdus (Hylocichla) pallasi

a. pallasi.

Turdus solitarius, *Wils.* AO. v. 1812, 95 (not the pl. 43, f. 2, which=*swainsoni; nec* Linn.).—*Bp.* Journ. Phila. Acad. iv. 1824, 275 (critical).—*? Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193 (Columbia River).—*Bp.* C. & GL. 1838, 17.—*Bp.* CA. i. 1850, 270.—*Aud.* Syn. 1839, 91.—*Aud.* BA. iii. 1841, 29, pl. 146.—*Thienemann,* Rhea, i. 1846, 125 (Vienna).—*? Woodh.* Sitgreave's Rep. 1853, 72 (Texas and New Mexico—may have been one of the other vars.).—*Thomps.* Vermont, 1853, 80.—*Hoy,* Pr. Phila. Acad. vi. 1853, 310 (Wisconsin).—*Read,* Pr. Phila. Acad. vi. 1853, 398 (Ohio).—*McCown,* Ann. Lyc. N. Y. vi. 1853, 13 (Texas).—*? Henry,* Pr. Phila. Acad. vii. 1855, 310 (New Mexico—may have been one of the other vars.).—*? Pratten,* Tr. Ill. Agr. Soc. 1855, 61 (Illinois).—*Haym.* Pr. Phila. Acad. viii. 1856, 289 (Indiana).—*Putn.* Pr. Essex Inst. i. 1856, 209.—*? Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Bry.* Pr. Bost. Soc. vi. 1857, 117 (Nova Scotia).—*Willis,* Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).—*Bland,* Smiths. Rep. for 1858, 1859, 287 (Bermuda).—*Degl.-Gerbe,* OE. i. 1867, 426 (Europe).—*Trippe,* Pr. Essex. Inst. vi. 1871, 115 (Minnesota).

Merula solitaria, *S. & R.* FBA. ii. 1831, 184, pl. "35" by err. for 37.—"*Vieill.* OAS. ii. 1807, 7, pl. 63, in part."—*Brew.* Pr. Bost. Soc. 1844, 191.

Turdus minor, *Bp.* Journ. Phila. Acad. iv. 1824, 33 (=*solitarius* Wils.; *nec* Gm.).—*Naum.* Isis, 1826, 520.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 75.—*Brehm.* VD. 1831, 393.—*Nutt.* Man. i. 1832, 346.—*Aud.* OB. i. 1832, 303, pl. 58; v. 1839, 445.—*Peab.* Rep. Orn. Mass. 1839, 305.—*? Towns.* Journ. Phila. Acad. viii. 1839, 153 (may have been *T. ustulatus*).—*Giraud,* BLI. 1844, 90.—*Bald.* Naum. i. 1849, 10 (Anhalt).

Turdus guttatus, *Cab.* Fn. Peru. 1845-'46, 187.

Turdus pallasii, *Cab.* Arch. f. Naturg. 1847, (1), 205.—*Homeyer,* Rhea, ii. 1849, 147 (monographic).—*Gundl.* J. f. O. 1855, 470 (Cuba).—*Bd.* BNA. 1858, 212.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 404 (Washington, D. C.).—*Verr.* Pr. Essex Inst. iii. 1862, 145 (Maine).—*Boardm.* Pr. Bost. Soc. ix. 1862, 124 (Maine).—*Verr.* Pr. Bost. Soc. ix. 1862, 137 (Anticosti).—*Bd.* Rev. AB. i. 1864, 14.—*McIlw.* Pr. Essex Inst. v. 1866, 84 (Canada West).—*Coues,* Pr. Essex Inst. v. 1868, 266 (New England).—*Coues,* Pr. Bost. Soc. xii. 1868, 106 (South Carolina).—*Trippe,* Am. Nat. ii. 1868, 380.—*Mayn.* Am. Nat. ii. 1868, 662, 663.—*Allen,* Am. Nat. ii. 1868, 488.—*Turnb.* B. E. Pa. 1869, 21; Phila. ed. 14.—*Abbott,* Am. Nat. iv. 1870, 540, 541.—*Parker,* Am. Nat. v. 1871, 168.—*Coues,* Pr. Phila. Acad. xxiii. 1871, 19 (North Carolina).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 357.—*Coues,* Key, 1872 72.—*Trippe,* Pr. Bost. Soc. xv. 1873, 234.—*Merriam,* Am. Nat. vii. 1874, 7, 8.

Turdus pallasi, *Cab.* MH. i. 1850, 5.—*Scl.* PZS. 1859, 325 (critical).—*Scl.* Ibis, iii. 1861, 282.—*Barn.* Smiths. Rep. for 1860, 1861, 435 (Pennsylvania).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 281 (New York).—*Allen,* Am. Nat. i. 1867, 109.—*Ridg.* Pr. Phila. Acad. xxi. 1869, 128 (critical).—*Allen,* Am. Nat. iii. 1869, 573.—*Mayn.* B. Fla. 1872, 8.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713.—*Coues,* BNW. 1874, 2.—*Trippe, ibid.* 225 (Colorado).—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.—*B. B. & R.* NAB. i. 1874, 18, pl. i. f. 6.

Turdus pallacii, *Allen,* Proc. Essex Inst. iv. 1864, 56.

Grive solitaire, *LeM.* Ois. Canad. 1861, 169.

Merle solitaire, *Degl.-Gerbe., l. c.*

Hermit Thrush; Solitary Thrush; Rufous-tailed Thrush; Ground Swamp Robin.

b. nanus.

? Unalascha Thrush, *Penn.* AZ. ii. 1785, 338, No. 202.

? Turdus aonalaschkae, *Gm.* SN. i. pt. ii. 1788, 808, No. 31.

? Turdus aconalaschkæ, *Lath.* IO. i. 1790, 329, No. 8 (Synop. iii. 23).—*Turt.* SN. i. 1806, 491.

? Muscicapa guttata, *Pall.* ZRA. i. 1811 (1831), 465, No. 106.

Turdus nanus, *Aud.* OB. v. 1839, 201. pl. 419 (name *T. minor* on pl.).—*Towns.* Journ. Phila. Acad. viii. 1839, 153.—*Aud.* Syn. 1839, 91.—*Aud.* BA. iii. 1841, 32, pl. 147.—*Gamb.* Proc. Phila. Acad. i. 1843, 262 (California).—*Henry,* Proc. Phil. Acad. vii. 1855, 310 (New Mexico).—*Scl.* PZS. 1859, 4.—*Bd.* BNA. 1858, 213.—*Scl.* PZS. 1859, 325 (critical).—*Xantus,* Pr. Phila. Acad. xi. 1859, 190 (California).—*Henry,* Pr. Phila. Acad. xi. 1859, 106 (New Mexico).—*Heerm.* PRRR. x. 1859, pt. iv. 45.—*Scl.* Ibis, iii. 1861, 282.—*Scl.* Cat. AB. 1862, 2.—*Bd.* Rev. AB. 1864, 15.—*Heerm.* Ibis, 1865, 475 (Texas).—*Trippe,* Am. Nat. ii. 1868, 380.—*Allen,* Am. Nat. ii. 1868, 488.—*Mayn.* Am. Nat. ii. 1868, 662.—*Ridg.* Pr. Phila. Acad. xxi. 1869, 129 (critical).—*Dall & Bann.* Tr. Chicago Acad. i. 1869, 275.—*Coop.* B. Cal. i. 1870, 4.—*Coop.* Am. Nat. iv. 1871, 757.—*Coop.* Am. Nat. viii. 1874, 16.—*? Brew.* Pr. Bost. Soc. xvii. 1875, 438 (New England).

Hylocichla nana, *Coues,* Ibis, 1863, 163 (Arizona).

Turdus (Hylocichla) nanus, *Coues,* Pr. Phila. Acad. xviii. 1866, 65 (Fort Whipple, Ariz.).

Turdus pallasii *var.* **nanus,** *Coues,* Key, 1872, 72.

Turdus pallasi *b.* **nanus,** *Coues,* BNW. 1874, 3.

? Turdus minor, *Gamb.* Pr. Phila. Acad. iii. 1846, 113 (Cal.); Journ. Phila. Acad. i. 1847, 41.

Dwarf Thrush; Dwarf Hermit Thrush.

c. auduboni.

Merula silens, *Sw.* Philos. Mag. i. 1827, 647.—*Sw.* FBA. ii. 1831, 186. (Not *Turdus silens* Vieill.).

Turdus silens, *Scl.* PZS. 1858, 300 (Parada).—*Scl.* PZS. 1859, 325 (critical).—*Scl.* Ibis, iii, 1861, 282.—*Scl.* Cat. AB. 1862, 2.

Turdus solitarius, *Scl.* PZS. 1857, 212 (Orizaba).

Turdus auduboni, *Bd.* Rev. AB. i. 1864, 16 (based on *M. silens* Sw.).—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 463.

Turdus audubonii, *Allen,* Am. Nat. ii. 1868, 489 (critical).—*Sumich.* Mem. Bost. Soc. i. 1869, 542 (Vera Cruz).—*Ridg.* Pr. Phila. Acad. xxi. 1869, 129 (critical).—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 705, 713.

Turdus pallasii *var.* **audubonii,** *Coues,* Key, 1872, 72.

Turdus pallasi *c.* **audubonii,** *Coues,* BNW. 1874, 3.

Audubon's Thrush; Rocky Mountain Hermit Thrush.

HAB.—North America at large, but especially the Eastern Province. Accidental in Europe (see above references). No valid West Indian or Central American quotations? Mexico? Var. *nanus* chiefly along the Pacific side, from Kodiak to Lower California. Var. *auduboni* from the Southern Rocky Mountain region and Mexico, where resident.

CH. SP.—*a.* PALLASI.—*Olivaceus, cauda discolore, rufescente; subtus albus, lateribus griseo-olivaceis, pectore et jugulo subflavicantibus, maculis nigris angularibus notatis.*

♂ ♀, in summer: Upper parts olivaceous, with a brownish cast, and therefore not so pure as in *swainsoni;* this color changing on the rump and

upper tail-coverts into the rufous of the tail, in decided contrast with the back. Under parts white, shaded with grayish-olive on the sides, the breast, jugulum, and sides of the neck more or less strongly tinged with yellowish, and marked with numerous large, angular, dusky spots, which extend back of the yellowish-tinted parts. Throat immaculate. A yellowish orbital ring. Bill brownish-black, with most of the under mandible livid whitish; mouth yellow; eyes brown; legs pale brownish. ♂, length, 7–7½ inches; extent, 11–12; wing, 3½–3¾; tail, 2¾–3. ♀ smaller, averaging under 7 inches in length, and other dimensions proportionally less.

In winter: The olivaceous of the upper parts assumes a more rufous cast, much like that of *ustulatus*, and the yellowish wash of the under parts and sides of the head and neck is more strongly pronounced. But the most rufous specimens are readily distinguished from *fuscescens* by the strong contrast between the color of the tail and other upper parts.

Very young: Most of the upper parts marked with pale yellowish longitudinal streaks, with clubbed extremities, and dusky specks at the end; while the feathers of the belly and flanks are often skirted with dusky in addition to the numerous blackish spots of the rest of the under parts.

b. NANUS.—*Minor; ♂ long. tot. circ.* 7; *alæ* 2⅛ *seu minus; caudæ circ.* 2½.

c. AUDUBONI.—*Major; ♂ long. tot. circ.* 7¾; *alæ*, 4 +; *caudæ* 3 +.

AMONG the Western *Hylocichlæ* of the *pallasi* type, there are a larger and a smaller race, both intergrading completely with the dimensions of Eastern *pallasi*, their respective averages being at about the maxima and minima of *pallasi* proper. The difference in size between them is more noticeable than that between either of them and *T. pallasi*, and appears to be preserved with much constancy. I am unable to appreciate any of the differences in coloration which have been ascribed; at any rate, these differences are fully within the normal range of variation of typical *pallasi*. These subspecies are less strongly indicated than either of those of the *swainsoni* type, and little violence would be done by declining to recognize them by name. *Nanus*, in particular, is positively indistinguishable from some small specimens of Eastern *pallasi*. *Auduboni* is rather better marked. I have never seen the wing of *pallasi* four inches long, and doubt that it ever exceeds this dimension, as is the case with some examples of *auduboni*.

The average of a large series of both sexes of typical *pallasi* from the Eastern States is:—Length, 7.00; extent, 11.25; wing, 3.75; tail, 2.75; tarsus, 1.15.

It is not easy to determine the proper name of this species

with the desired precision. Most of the later descriptions upon which names have been based are perfectly intelligible; but the doubts which attach to several early accounts will probably never be dispelled. The earliest claimant in this connection appears to be the Unalashka Thrush, described with varying orthography by Latham and Pennant, and subsequently the basis of *Turdus aonalaschkae* of Gmelin. To enable the reader to judge for himself how little can be made of the accounts of these authors, Pennant's description is reproduced: "Thrush with the crown and back brown, obscurely spotted with dusky: breast yellow, spotted with black: coverts of the wings, primaries, and tail, dusky, edged with testaceous. Size of a lark. Found on Unalascha." This description might be supposed to refer to a young bird of the present species, still in the speckled plumage; but it is inadequate to the establishment of a species.

To pursue the subject of the Unalashka Thrush, we may next notice a bird described by the celebrated traveler and naturalist, Peter S. Pallas, in the Zoographia Rosso-Asiatica, a work which appears to have been actually printed in 1811, though not published, nor generally accessible, until 1831. This author describes as a new species a certain *Muscicapa guttata*, from the island of Kodiak, querying the Unalashka Thrush as synonymous. But how much doubt he felt on this score is evident from the fact that he also cites the same bird, with a note of interrogation, as a synonym of his *Turdus auroreus*. The general drift of the description of *Muscicapa guttata* indicates some species of *Turdus* of the *Hylocichla* group, in the speckled plumage of the young; while the expressions "uropygium rufolutescens", "rectrices rufescentes", would seem to point to the Hermit Thrush. This identification was made by Dr. Cabanis in the critical commentary accompanying Tschudi's Fauna Peruana; but the learned German ornithologist seems to have soon felt the uncertainty attaching to this case, for he relinquished his *Turdus guttatus*, to bestow upon the Hermit Thrush the name of *T. pallasii*, by which it has of late years been generally known. While I admit the high probability of the pertinence of Pallas's "*Muscicapa*" to the present species, I scarcely think that we are required to adopt the name, especially in the uncertainty as to which of the varieties of the species the name more particularly applies.

Meanwhile, in 1812, Alexander Wilson described the Hermit

Thrush with sufficient accuracy, though his plate accompanying rather indicates the Olive-backed Thrush. He gave it the appropriate name of *Turdus solitarius*, which has been adopted by many ornithologists, but which, unfortunately, cannot stand, there being already a *Turdus solitarius* of Linnæus.

The next original name bestowed upon the Hermit Thrush was *Turdus nanus*, applied by Audubon in 1839, used almost without exception, of late years, for the Western variety. The name antedates Cabanis's *pallasii* by several years; the description is evidently that of the Dwarf Thrush, for the main point Audubon makes is the smaller size of his bird; and Dr. Brewer has recently contended that the name should replace that of *pallasi*. It has been supposed that Audubon intended only to signalize the Western Hermit, or Dwarf Thrush, in bestowing the name *nanus*. But reference to his original description will show the contrary; Audubon having first noted the bird from the *Atlantic* States. "It is extremely rare in our Atlantic districts, where, however, I have procured a few individuals. Indeed, the first intimation which I received respecting it was from my friend Charles Pickering of Philadelphia, who, having procured one, had kept its wings and head, the smallness of which struck me at once. I was then far from imagining that its native haunts were the valleys of the Columbia River", &c. Since the Dwarf Thrush, as understood by modern ornithologists, is confined to the West, the Eastern specimens Audubon procured must have been only unusually small examples of the common Hermit Thrush, in which a difference of an inch in length is not seldom found. It is thus evident that the name *nanus* includes both the Hermit Thrush proper, *T. pallasi* of most late authors, and the Western variety, or Dwarf Thrush; and I really do not see how Dr. Brewer's conclusion, that we should reverse our usual nomenclature, make the Dwarf Thrush the original species, and write *T. nanus* var. *pallasi* instead of *T. pallasi* var. *nanus*, can be gainsaid. It will, however, tend to prevent further misunderstanding of a matter already sufficiently involved to accept the identification of the names made by Professor Baird in 1858.

The name of *Turdus minor* Gmelin has been applied by Bonaparte to this species, and his example has been followed by several writers; the name, therefore, requires examination in this connection. Referring to Gmelin, it will be found that his *Turdus minor* is not available for use in any connection,

being a thoroughly "made up" species. The diagnosis given is too short to answer any purpose, and, in fact, applies almost equally well to several different species of *Hylocichla*. His quotations are of Brisson, Buffon, Pennant, Edwards, Catesby, and Latham, whose several descriptions are those of different species. To take only two of them: Pennant's "Little Thrush" was the species now known as *T. swainsoni;* while Latham's "Little Thrush" was *T. fuscescens.* The natural result of Gmelin's compilation in this case was that his name *minor* has been applied repeatedly to each one of at least three species, namely, *T. pallasi*, *T. swainsoni*, and *T. fuscescens.*

In 1827, William Swainson described a variety of the Hermit Thrush from Mexico, under the name of *Merula silens.* This is the same bird afterward named *auduboni* by Professor Baird—the name *silens* being pre-occupied in the genus for another species, Vieillot having first applied the term *silens* to the *mustelinus* of Wilson, which is the *fuscescens* of Stephens.

This sketch of the early history of the Hermit Thrush's troubles in the way of a name may be continued with a similar account of the two most nearly allied species, to avoid the necessity of again recurring to such dry and uninviting matters. We will first take up the Olive-backed Thrush, *T. swainsoni* of most late authors.

The earliest name of supposed applicability to the Olive-backed Thrush is derived from Buffon's *Grive de la Caroline*, as described by that author, and as figured in the Planches Enluminées (pl. 556, fig. 2). This figure became the exclusive basis of two different names; for P. L. S. Müller, in his Supplement to Linnæus' Systema Naturæ, of date 1776, at page 140, named it *Turdus carolinus;* and P. Boddaert, in his rare Tableau (1783) of the Planches Enluminées, page 32, called it *Turdus brunneus.* G. R. Gray, in the Genera of Birds, claims that the name *brunneus* should stand for the species; this could not have been, even were it not anticipated by Müller's name; for it so happens that Buffon's figure, as Mr. Cassin has remarked, is one of the few of the whole series of Planches Enluminées that is utterly unrecognizable. It may have been either one of the smaller Thrushes, if not some other bird; and the reference is entirely out of the question as the basis of a species. *Turdus* "carolinus" I have seen nowhere except in Müller; *T.* "brunneus" is used by Dr. Brewer in 1852, but for a different species, namely, *T. fuscescens.*

Pennant, as we have already seen, described the Olive-backed Thrush in 1785 under the name of the "Little Thrush", in this differing from Latham, whose "Little Thrush" was the *T. fuscescens*. But both Pennant and Latham, in their respective works, introduce a "Brown Thrush", which afterward became the exclusive basis of *Turdus fuscus* of Gmelin. That this bird is certainly no other than the Olive-backed is evident from the following description, quoted from Pennant:—"Thrush with the head, neck, back, cheeks, coverts, and tail, of an olive-brown: primaries dusky: breast and belly of a dirty white, marked with great brown spots: legs dusky. Size of the former [*i. e.*, the Tawny Thrush, *T. mustelinus* Gm.]; and a native of the same country [New York]." Here is a perfectly accurate and diagnostic phrase: the name *Turdus fuscus*, based upon it, would therefore require adoption, were it not anticipated in point of date by *Turdus fuscus* of Müller, Syst. Nat. Suppl. 1776, p. 142, which is an altogether different bird, described from the Cape of Good Hope. So this name *fuscus* of Gmelin is thrown out of the case.

In 1831, Swainson and Richardson described the Olive-backed Thrush as *Merula wilsoni*. This, however, was not an original imposition of a name, but merely an erroneous identification of Bonaparte's *Turdus wilsonii*, which latter was the *mustelinus* Wils. (*nec* Gmelin, *i. e.*, the *fuscescens* Steph.).

A few years subsequently, in 1844, Mr. J. P. Giraud and Dr. T. M. Brewer, independently of each other, applied to the Olive-backed Thrush the name of *olivaceus*—appropriate indeed, and only exceptionable in the fact that there were already one or two entirely different species called *Turdus olivaceus*. The name therefore cannot stand in this connection, unless the earlier birds of the same name are shown to belong to a different genus.

In this evident lack of a tenable specific name for the Olive-backed Thrush, Dr. Cabanis proposed to dedicate it to Swainson, and the term *Turdus swainsoni* has been almost exclusively adopted for the species of late years.

Two varieties of this species, called respectively *ustulatus* and *alicicæ*, have been named, but do not require comment here.

Turning now to the Tawny or Wilson's Thrush, or Veery, as it is indifferently called, we find what is probably the earliest indication of this species in the "Little Thrush" of Latham (but not of Pennant), on which Gmelin based his *T. minor* in

part, as already shown. It appears to have been first adequately described by Alexander Wilson, in 1812, under the unfortunate name of Tawny Thrush, *Turdus mustelinus*, notwithstanding that this author clearly perceived it was *not* the "Tawny Thrush" of Pennant, upon which Gmelin's name *T. mustelinus* rested. The same bird was redescribed by Stephens, in his continuation of Shaw's General Zoology, in 1817, under the new name of *Turdus fuscescens*, which is now generally adopted. Vieillot, perceiving Wilson's double employ of the term *T. mustelinus*, bestowed upon it the name *T. silens* in 1823. Very shortly afterward, the Prince Bonaparte, also noting Wilson's error, but either ignoring or ignorant of both Stephens' and Vieillot's prior designations, dedicated the species to Wilson, calling it *Turdus wilsonii*, a name current among authors for several years. These are the only original names I have met with of undoubted applicability to the present species; though Swainson and other writers have called the bird *T. minor* after Gmelin, and Dr. Brewer has once applied to it the term *T. brunneus*.

The Wood Thrush being a bird of more marked characters than any one of the others, there has been little or no uncertainty respecting it. The original descriptions—the earliest at least that have come to light so far—were those of Latham and Pennant, who describe it from New York under the name of Tawny Thrush, the basis of *T. mustelinus* of Gmelin. Wilson, having appropriated this name to another species, as we have already seen, called the Wood Thrush *T. melodus*—in so doing apparently following Bartram, who had called it *T. melodes* in 1791.

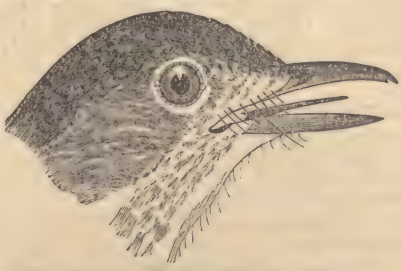

FIG. 4.—Head of Wood Thrush. Nat. size.

The synonymy given at the head of the several species represents an epitome of the whole subject here treated, with a great many additional references to the writings of various authors. As the Wood Thrush will not be formally introduced

into the present work, since it is not known to occur in the Colorado Basin, its synonymy and description are subjoined,* to complete a review of the subject. A figure of the head of this species is likewise given.

WHEN we come to sketch the life-history of the Hermit Thrush, we shall be met by difficulties as great as those that beset the interpretation of its written record, if we attempt to discriminate between the three recognized varieties. Their mode of life is the same, notwithstanding the points of dissimi-

*The Wood Thrush.—Turdus (Hylocichla) mustelinus.

Tawny Thrush, *Penn.* AZ. ii. 1785, 337, No. 198 (New York).—*Lath.* Syn. ii. pt. i. 1783, 28, No. 15. (Not of Wilson.)

Turdus mustelinus, *Gm.* SN. i. pt. ii. 1788, 817, No. 57 (based on Penn. & Lath.).—*Turt.* SN. i. 1806, 497.—*Lath.* IO. i. 1790, 331, No. 15.—*Vieill.* OAS. ii. 1807, 6, pl. 62.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 75.—*Nutt.* Man. i. 1832, 343.—*Aud.* OB. i. 1832, 372; v. 1839, 446; pl. 73.—*Bp.* C. & GL. 1838, 17.—*Peab.* Rep. Orn. Mass. 1839, 304.—*D'Orb.* La Sag. Cuba, Ois. 1839, 48 (Cuba).—*Aud.* BA. iii. 1841, 24, pl. 144.—*Gosse,* B. Jam. 1847, 144 (in winter).—*Bp.* CA. i. 1850, 270.—*Read,* Pr. Phila. Acad. vi. 1853, 398 (Ohio).—*Hoy,* Pr. Phila. Acad. vi. 1853, 310 (Wisconsin).—*Woodh.* Sitgr. Rep. 1853, 72.—*Gerhardt,* Naum. iii. 1853, 38.—*Kennic.* Tr. Illinois State Agric. Soc. i. 1855, 601.—*Pratten,* Tr. Illinois State Agric. Soc. i. 1855, 582.—*Gund.* J. f. O. 1855, 469 (Cuba).—*Haym.* Pr. Phila. Acad. viii. 1856, 289 (Indiana).—*Putn.* Proc. Essex Inst. i. 1856, 209.—*Scl.* PZS. 1856, 294 (Cordova).—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Maxim.* J. f. O. 1858, 179.—*Bd.* BNA. 1858, 212.—*Bland.* Smiths. Rep. for 1858, 1859, 287 (Bermudas).—*Scl. & Salv.* Ibis, 1859, 6 (Guatemala).—*Scl.* PZS. 1859, 325 (critical), 362 (Xalapa).—*Moore,* PZS. 1859, 55 (Omoa).—*Martens,* J. f. O. 1859, 212 (Bermudas).—*Giebel,* Vög. 1860, 37, fig. 84.—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 435 (Pennsylvania).—*Scl.* Ibis, iii, 1861, 282.—*Gundl.* J. f. O. 1861, 324 (Cuba).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, —.—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 158 (Missouri River).—*Albr.* J. f. O. 1862, 194, 201 (Jamaica).—*Allen,* Pr. Ess. Inst. iv. 1864, 55.—*Bd.* Rev. AB. 1864, 13.—*Hoy,* Smiths. Rep. for 1864, 1865, 437 (Missouri).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 281.—*McIlwr.* Pr. Ess. Inst. v. 1866, 84 (Canada West).—*Allen,* Am. Nat. i. 1867, 110.—*Coues,* Pr. Bost. Soc. xii. 1868, 106 (South Carolina).—*Coues,* Pr. Ess. Inst. v. 1868, 266.—*Sumich.* Mem. Bost. Soc. i. 1869, 543 (Vera Cruz).—*Turnb.* B. E. Pa. 1869, 21; Phila. ed. 14.—*Abbott,* Am. Nat. iv. 1870, 540, 541.—*Trippe,* Pr. Ess. Inst. vi. 1871, 115.—*Allen,* Am. Nat. vi. 1872, 266.—*Allen,* Bull. MCZ. iii. 1872, 124, 173 (Kansas).—*Gundl.* J. f. O. 1872, 405 (Cuba).—*Scott,* Pr. Bost. Soc. xv. 1872, 220.—*Coues,* Key, 1872, 72.—*Trippe,* Pr. Bost. Soc. xv. 1873, 234.—*Coues,* BNW. 1874, 2.—*B. B. & R.* NAB. i, 1874, 7, pl. i. f. i.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.

Merula mustelina, *Rich.* List, 1837.

Merula mustelinus, *Denny,* PZS. 1847, 38.

Turdus melodes, *Bartr.* Trav. 1791, p. 290 bis.

Turdus melodus, *Wils.* AO. i. 1808, 35, pl. 2, f. 1.—*Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 57.—*Gosse,* Alabama, 1859, 295.

Turdus melodius, *Bp.* Journ. Phila. Acad. iv. 1824, 33.

Turdus densus, *Bp.* CR. xxviii. 1853, 2.

Grive des Bois, Flûte, *LeMoine,* Ois. Canad. 1861, 176.

Merle tanné, *D'Orbig. l. c.*

CH. SP.—♂ ♀ *Supra mustelinus, caudam versus olivascens; subtus albus, pectore lateribusque maculis magnis, numerosis, rotundatis, nigris notatis.*

♂, ♀, adult: Upper parts, including the surface of the closed wings, tawny-brown, purest and deepest on the head, shading insensibly into oliva-

larity which some observers, recounting the impressions they received from various transient circumstances of observation, have sought to establish. For all reasonable purposes of biography, the several races of the Hermit Thrush may be treated as one, as I shall do on the present occasion, saving some particulars of their geographical distribution. Audubon's variety, or the Rocky Mountain Hermit, is specialized in this respect, having an exceptional distribution, both during the breeding-season and at other periods of the year—its special habitat, which subjects it to climatic influences equally peculiar, being beyond doubt the cause of the slight modifications of physical characters it has undergone. Audubon's Thrush haunts the wooded mountainous regions of the West, especially in the area known as the Middle Faunal Province. It has not, to my knowledge, been traced farther north than Fort Bridger, in the Rocky Mountains; its extension in this direction contrasting strongly with that of either the Dwarf or true Hermit, which reach the Arctic regions. On the other hand, this variety is the characteristic representative of the species in Mexico, throughout the Alpine regions, up to an altitude of about 2,500 meters. It breeds in that country, and, according to M. Sumichrast, is generally distributed and abundant. Some of the current references to "*Turdus pallasi*" in Mexico doubtless belong to this

ceous on the rump and tail. Below, pure white, faintly tinged on the breast with buff, and everywhere except on the throat, middle of belly, and crissum marked with numerous large, well-defined, rounded or subtriangular blackish spots. Inner webs and ends of quills fuscous, with a white or buffy edging toward the base. Greater under wing-coverts mostly white. Auriculars sharply streaked with dusky and white. Bill blackish-brown with flesh-colored or yellowish base. Feet like this part of the bill. Length, 7½–8 inches; extent, about 13; wing, 4–4¼; tail, 3–3¼; bill, ⅝; tarsus, 1¼; middle toe and claw less. The sexes do not differ appreciably, either in size or coloration.

Young: For a short time after leaving the nest, the young are speckled or streaked above with pale yellowish or whitish; usually especially noticeable as triangular spots on the wing-coverts. But these speedily disappear, when a plumage scarcely different from that of the adult is assumed.

The present is the most strongly marked species of the subgenus *Hylocichla*. In *T. pallasi*, the only other one showing both tawny and olive on the upper parts, the position of the two colors is reversed, the tawny occupying the rump, the olive the head. In no other species are the spots below so large, sharp, numerous, and generally dispersed, only the central line of the throat, middle of the belly, and the crissum remaining immaculate. The purity of the white, moreover, only gives way to a faint, sometimes almost inappreciable, tinge of buff on the breast.

variety; yet it does not necessarily follow that the true Hermit Thrush is never found so far south. I should not leave this subject of the southerly distribution of the Audubon Thrush without calling attention to the fact that it constitutes one of the few exceptions to the general rule that southern representatives of a species are smaller than the others; its *larger* size being unaccountable on any premises we at present command.

The distribution of the Dwarf Hermit in latitude agrees with that of its eastern relative. This bird is the prevailing, if not the exclusive, form in the Pacific region, from Alaska as far north at least as Sitka and the island of Kodiak, to the extremity of the peninsula of Lower California. Though it is particularly attached to the immediate Pacific slopes, it yet spreads eastward to the Rocky Mountains. Dr. J. G. Cooper found it in the Colorado Valley, probably at Fort Mojave, where he was stationed for some time as a medical officer of the Army. I occasionally saw it in the mountains of Central Arizona, and within a year or two Mr. H. W. Henshaw has observed it still further eastward, in Southern Arizona, and among the headwaters of the Gila in New Mexico. These advices clearly show that the limit of eastward dispersion assigned by Mr. Ridgway (the valley of the Humboldt River in Nevada), must be considerably enlarged. As to the movements of the species within the general area it inhabits, the accounts which have reached us are perplexing; yet they may, I think, be adjusted, if we exercise due care. It is evident from Dr. Cooper's researches, that the Dwarf Hermit winters in lower portions of Arizona, a fact which both Mr. Henshaw's observations and my own would confirm, were this necessary; and its occurrence at Cape St. Lucas shows probably the southernmost point reached at this season. Starting from these and corresponding latitudes, the bird migrates to Alaska, as already intimated, and breeds at the northernmost points it reaches. The limit of the breeding-range in the other direction remains to be determined, for it is pretty certain that Dr. Cooper, in speaking of nests which he found at Santa Cruz, and supposed to belong to the Dwarf Thrush, was mistaken. He describes the nests as placed "about five feet above the ground", and says that they contained speckled eggs, neither of which statements agrees with what we know of the nidification and color of the eggs of the Hermit Thrush. Dr. Brewer has alluded to these discrepancies, which his great familiarity with the subject ena-

bled him to perceive at once, though, somewhat inconsistently, he goes on to quote Dr. Cooper's account in connection with the Dwarf Thrush. We may without hesitation reject the whole record as far as it bears upon an alleged breeding of the Dwarf Thrush so far south, since there is no doubt that Dr. Cooper's nests were really those of the Olive-backed Thrush, or its variety *ustulatus*. Observations are wanting to determine the case precisely, yet, remembering how strongly elevation of surface affects the breeding-range of species, and that the Dwarf Thrush is found in wooded mountainous tracts, we may grant that it will probably be found to nestle much farther south than its Eastern relative is known to do. I should not be surprised if its dispersion during the breeding-season were found very closely correspondent with that of the Varied Thrush.

Turning now to the better-known Hermit Thrush of the East, that shy recluse whose lowly home has been often entered by the curious naturalist, eager to learn its secrets, the first thing that strikes us as bearing upon its furtive movements is the lack of any trace of its presence in those subtropical regions to which the Wood Thrush and the Olive-backed and others resort in winter. We are not even sure that it takes the short flight from Florida, a favorite home, to any of the West India Islands. Though Dr. Gundlach, the veteran ornithologist of Cuba, whose labors for many years have done so much to elucidate the bird-life of that island, once recorded its presence there, it seems that he had really another species in view. Like the Catbird and the Thrasher, the Hermit Thrush finds in the groves and swamps of the Southern States a winter home so congenial that it need seek no further. Audubon informed us many years ago of its abundance in Mississippi and Louisiana; and later records, multiplying rapidly with the growing number of those who are interested in the delightful study of birds, not only confirm the statement, but extend its applicability to most of the Southern States. I well remember the admiration which this brave and hardy little bird used to excite in me, when I was first trying my own wings in short flights in ornithology, mostly confined to the vicinity of my home at Washington, by its appearance, nothing daunted, during the inclemency of October and March, when its more delicate relatives were far away. Its very slender, pale-colored legs, like those of many other insect-eating birds which spend much

of their time on the ground, always suggested that it was barefooted, and tempted me to wonder why it did not suffer, rambling incessantly over the frozen ground, or even leaving its track in a slight fall of snow. Though I never knew it to endure the depth of winter in this locality, yet other observers have found it lingering through the whole season still further north—the Rev. Dr. Turnbull has left us such a record in his elegant little volume entitled "The Birds of East Pennsylvania and New Jersey"; and Mr. C. J. Maynard says he has seen the bird in Northern New Hampshire in November, when the snow was on the ground. Those who care to look farther into the details of the subject will find many other records, which show the whereabouts of the bird at various seasons, in my "Birds of the Northwest." Here, I will content myself with the further statement that it is chiefly known as a migrant in the Middle States, not pausing to mate and rear its young south of Massachusetts as far as we now know,—though I suspect that it will yet be discovered to nestle in some of the untried recesses of the Alleghanies. In the northerly parts of New England, and thence to the Arctic regions, the Hermit Thrush is at home in summer. Whether it ever reaches Greenland or not is uncertain. A Thrush is recorded from that country by the accomplished Danish ornithologist Professor Reinhardt, under the name of "*Turdus minor* Gm."; but I believe that the actual reference in this case is to the Olive-backed. The same doubt attaches to a part, at least, of the quotations we have of the bird's occurrence in Europe; others, however, are undisputed, and the fact may be considered established that it occasionally deviates so widely from its established routes of migration.

From the West, we have the testimony of two excellent observers, to show that the Hermit Thrush reaches the Rocky Mountains. Mr. J. A. Allen and Mr. T. M. Trippe have each found it in Colorado, and ascertained that it breeds in that Territory, in the mountains, up to an altitude of at least 8,000 feet.

How quietly and with what solicitude for privacy the nesting of the Hermit Thrush is accomplished! Such care is taken to conceal its nest in the recesses of tangled undergrowth that few are the ornithologists who have found it. If Wilson, Nuttall, or Audubon ever saw a nest, no one of them recognized its owner. The nests and eggs which they describe as those of the Hermit were certainly the Olive-backed Thrush's, the

only one which nests at any considerable distance from the ground and lays spotted eggs. And unless the Hermit has changed its choice of a summer home since Wilson and Audubon thought they had discovered its nest, it never bred in the southerly regions where they thought it did. But their mistake was not unnatural, since, singularly enough, neither of these ornithologists knew the difference between the Olive-backed and the Hermit Thrush—a distinction erroneously said by Dr. Brewer to have been first suggested by Professor Baird in 1844, as Swainson had discriminated the two with perfect accuracy, though under wrong names, in 1831. The manner in which the nest of the Hermit Thrush is built, its situation, and the eggs, are all so similar to the Veery's that one must detect the shy parents .themselves before being sure which has been found. The nest is built on the ground or near it, generally in some low, secluded spot; no mud is used in its composition, the whole fabric being a rather rude and inartistic matting of withered leaves, weed-stalks, bark-strips, and grasses—the coarser and stiffer substances outside, the finer fibres within. The cup is small in comparison with the whole size, owing to the thickness of the walls and of the base. The eggs are like those of the Robin or Wood Thrush, in their uniform greenish-blue color, but smaller, measuring about nine-tenths of an inch in length by five-eighths in breadth; being thus not distinguishable from those of the Veery. I have never known of an instance, to my recollection, of the eggs being spotted; but so many birds which usually lay whole-colored bluish eggs occasionally drop a set which are somewhat speckled that I should not be surprised to find at any time a Hermit Thrush's egg showing a few specks about the larger end.

Great injustice would be done were the Hermit's musical powers overlooked in any sketch, however slight, of its life-history. The earlier authors were evidently unaware of its accomplishments, for its melody is lavished on the gloom of the swamp, or lost in the darkening aisles of the forest, where years passed by before the ear of the patient and toiling student of nature was gladdened by the sweet refrain. Wilson denies it song; Audubon speaks of "its single plaintive note", though he adds, perhaps upon information received from his friend Dr. Pickering, that "its song is sometimes agreeable". Nuttall seems to have first recognized the power and sweet-

ness of the lay of our Hermit: he compares it to the famous Nightingale, that sweet princess of song, and ranks it far above the Wood Thrush. Later writers agree in this high estimate of the bird's powers, though it may be questioned whether a comparison unfavorable to the Wood Thrush is a perfectly just discrimination. The weird associations of the spot where the Hermit triumphs, the mystery inseparable from the voice of an unseen musician, conspire to heighten the effect of the sweet, silvery, bell-like notes, which, beginning soft, low, and tinkling, rise higher and higher, to end abruptly with a clear, ringing intonation. It is the reverse of the lay of the Wood Thrush, which swells at once into powerful and sustained effort, then gradually dies away, as though the bird were receding from us; for the song of the Hermit first steals upon us from afar, then seems to draw nearer, as if the timid recluse were weary of solitude, and craved recognition of its conscious power to please. Yet it is but a momentary indecision — true to a vow of seclusion, the anchorite is gone again to its inviolate grotto in the fastnesses of the swamp, where a world of melody is wasted in its pathetic song of life: —

> "Full many a gem of purest ray serene,
> The dark unfathomed caves of ocean bear;
> Full many a flower is born to blush unseen,
> And waste its sweetness on the desert air."

Olive-backed Thrush

Turdus (Hylocichla) swainsoni

a. swainsoni.

Little Thrush, *Penn.* AZ. ii. 1785, 338, No. 201 (not of Latham).

Turdus minor, *Gm.* SN. i. pt. ii. 1788, 809 (in part; mixed with *fuscescens*).—*Lath.* IO. i. 1790, 328, No. 5 (in part).—*Turt.* SN. i. 1806, 491.—*Vieill.* OAS. ii, 1807, 7, pl. 63 (in part).

Turdus minor, *Bp.* C. & GL. 1838, 17 (wrongly quotes FBA. pl. 36, which is *fuscescens*).—*Bp.* CA. i. 1850, 271.—*Reinh.* J. f. O. 1854, 427 (Greenland).—*Scl.* PZS. 1857, 212 (Orizaba).—*Reinh.* Ibis, iii. 1861, 6 (Greenland).

Brown Thrush, *Penn.* AZ. ii. 1785, 337, No. 199.—*Lath.* Syn. ii. pt. i. 1783, 28, No. 16.

Turdus fuscus, *Gm.* SN. i. pt. ii. 1788, 817, No. 56 (based on Penn. & Lath.; name preoccupied).—*Turt.* SN. i. 1806, 497.

Turdus solitarius, *Wils.* AO. v. 1812, pl. 43, f. 2 (not the text on p. 95).—*Coues,* Pr. Bost. Soc. xii. 1868, 106 (South Carolina. Slip of the pen for *swainsoni*).

Merula wilsonii, *S. & R.* FBA. ii. 1831, 182 (excl. syn. "*mustelinus* Wils.").

Merula olivacea, *Brew.* Pr. Bost. Soc. i. 1844, 191.—*Thomps.* Vermont, 1853, app. 22.

Turdus olivaceus, *Giraud,* BLI. 1844, 92.—*Bry.* Pr. Bost. Soc. vi. 1857, 117 (Nova Scotia).—*Willis,* Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).—*Martens,* J. f. O. 1859, 212 (Bermudas).

Turdus swainsonii, *Cab.* Fn. Peru. 1845–'46, 187.—*Cab.* Arch. f. Naturg. 1847 (i), 205.—*Homeyer,* Rhea, ii. 1849, 149 (monographic). *Cab.* MH. 1850, 5 (Siberia).—*Cab.* J. f. O. 1857, 241 (Cuba).—*Bd.* BNA. 1858, 216.—*Gund.* J. f. O. 1861, 324 (Cuba).—*Blakis.* Ibis, iv. 1862, 4 (Saskatchewan).—*Boardm.* Pr. Bost. Soc. ix. 1862, 124 (Maine).—*Verr.* Pr. Bost. Soc. ix. 1862, 137 (Anticosti).—*Verr.* Pr. Ess. Inst. iii. 1862, 145 (Maine).—*Blakis.* Ibis, 1863, 58 (Fort Carlton).—*Bd.* Rev. AB. 1864, 19.—*Allen,* Pr. Ess. Inst. iv. 1864, 56 (Massachusetts).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 281 (New York).—*McIlwr.* Pr. Ess. Inst. v. 1866, 84.—*Degl.-Gerbe,* OE. i. 1867, 427 (Europe).—*Pelz.* Orn. Bras. ii. 1868, 92.—*Coues,* Proc. Ess. Inst. v. 1868, 266 (New England).—*Allen,* Am. Nat. ii. 1868, 488, 489.—*Mayn.* Am. Nat. ii. 1868, 662.—*Turnb.* B. E. Pa. 1869, 21; Phila. ed. 14.—*Coop.* Am. Nat. iii. 1869, 31, 295.—*Allen,* Am. Nat. iii. 1869, 573, 574.—*Ridg.* Pr. Phila. Acad. xxi. 1869, 128 (critical).—*Abbott,* Am. Nat. iv. 1870, 541.—*Parker,* Am. Nat. v. 1871, 168.—*Trippe.* Pr. Ess. Inst. vi. 1871, 115 (Minnesota).—*Wyatt,* Ibis, i. 3d. ser. 1871, 320 (Colombia).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 358.—*Allen,* Am. Nat. vi. 1872, 266.—*Coues,* Key, 1872, 72.—*Mayn.* B. Fla. 1872, 6.—*Gundl.* J. f. O. 1872, 405 (Cuba).—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 704, 713.—*Trippe,* Pr. Bost. Soc. xv. 1873, 234.

Turdus swainsoni, *Scl.* PZS. 1858, 451 (Ecuador).—*Scl.* PZS. 1859, 326 (critical).—*Scl. & Salv.* Ibis, i. 1859, 6 (Guatemala).—*Scl.* PZS. 1860, 84 (Ecuador).—*Scl.* Ibis, iii. 1861, 282.—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 435 (Pennsylvania).—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 91 (Costa Rica).—*v. Frantz.* J. f. O. 1869, 289 (Costa Rica).—*Coues,* Am. Nat. v. 1871, 197.—*Merrill,* Am. Nat. viii. 1874, 547.—*Coues,* BNW. 1874, 4; *Trippe, ibid.* 228; *Wheaton, ibid.* 233.—*B. B. & R.* NAB. i, 1874, 14, pl. i. f. 4.—*Nelson,* Pr. Bost. Soc. xvii. 1875, 238, 345 (Utah).—*Brew.* Pr. Bost. Soc. xvii, 1875, 438.

Turdus minimus, *? Lafr.* RZ. xi. 1848, 5 (Bogota).—*Scl.* PZS. 1854, 111 (Quijos).—*Scl.* PZS. 1855, 145 (Bogota).—*Bry.* Pr. Bost. Soc. 1859, 226 (Bogota).—*Lawr.* Ann. Lyc. N. Y. viii. 1863, 7 (Panama).

Turdus manus, *Sam.* Am. Nat. ii, 1868, 218 (err.).

Grive de Swainson, *LeM.* Ois. Canad. 1861, 170.

Merle de Swainson, *Degl.-Gerbe.* l. c.

Olive-backed Thrush; Swainson's Thrush; Swamp Robin.

b. aliciæ.

Turdus aliciæ, *Bd.* BNA. 1858, 217; ed. of 1861, pl. 81, f. 2.—*Scl.* PZS. 1859, 326 (critical).—*Scl.* Ibis, iii. 1861, 282.—*Coues,* Proc. Acad. Nat. Sci. Phila. 1861, 217 (Labrador).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 405 (Washington, D. C.).—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 159.—*Bd.* Rev. 1864, 21.—*All.* Am. Nat. ii. 1868, 489 (critical).—*Mayn.* Am. Nat. ii. 1868, 662.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 91 (Costa Rica).—*Coues,* Pr. Ess. Inst. v. 1868, 267.—*Dall & Bann.* Tr. Chicago Acad. i. 1869, 275 (Alaska).—*Turnb.* B. E. Pa. 1869, 22; Phila. ed. 15.—*Ridg.* Pr. Phila. Acad. xxi. 1869, 128 (critical).—*Allen,* Am. Nat. iii. 1869, 574.—*Dall,* Am. Nat. iv. 1870, 600.—*Salv.* PZS. 1870, 180 (Veragua).—*Coues,* Pr. Phila. Acad. xxiii. 1871, 19 (North Carolina).—*Coues,* Am. Nat. vii. 1873, 222.—*B. B. & R.* NAB. i, 11, pl. i. f. 3.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.

Turdus swainsonii *var.* **aliciæ,** *Coues,* Key, 1872, 73.

Turdus swainsoni *b.* **aliciæ,** *Coues,* BNW. 1874, 4.

Turdus aliciae, *v. Frantz,* J. f. O. 1869, 289 (Costa Rica).—*Gundl.* J. f. O. 1872, 405 (Cuba).—*Tacz.* J. f. O. 1872, 440, 1873, 112 (East Siberia).

Alice's Thrush; Gray-cheeked Thrush.

c. ustulatus.

Turdus ustulatus, *Nutt.* Man. i. 2d ed. 1840, p. vi.—*Bd.* BNA. 1858, 215; ed. of 1860, pl. 81, f. 1.—*Scl.* PZS. 1859, 326 (critical).—*C. & S.* NHWT. 1860, 171.—*Scl.* Ibis, iii. 1861, 282.—*Bd.* Rev. AB. 1864, 18.—*Brown,* Ibis, iv^2, 1868, 420 (Vancouver).—*Allen,* Am. Nat. ii. 1868, 489.—*Coop.* Am. Nat. iii. 1869, 31.—*Ridg.* Pr. Phila. Acad. xxi. 1869, 127 (critical).—*Dall & Bann.* Tr. Chicago Acad. i. 1869, 275.—*Coop.* B. Cal. i. 1870, 5.—*Grayson,* Pr. Bost. Soc. xiv. 1872, 276 (Tres Marias Islands).

Turdus cestulatus, *Nutt.* Man. i. 2d ed. 1840, 400 (err. typog. corrected on p. vi).

Turdus swainsonii *var.* **ustulatus,** *Coues,* Key, 1872, 73.

Turdus swainsoni *var.* **ustulatus,** *B. B. & R.* NAB. i, 1874, 16, pl. i. f. 2.—*Nelson,* Pr. Bost. Soc. xvii. 1875, 354 (California).

Turdus swainsoni *c.* **ustulatus,** *Coues,* BNW. 1874, 4.

(?) Turdus wilsonii, *Towns.* Journ. Phila. Acad. viii. 1839, 153 (Columbia River).

CH. SP. *a.* SWAINSONI.— ♂ ♀ *Olivaceus, cauda concolore; subtus albus, lateribus griseo-olivaceis, pectore, jugulo, palpebris, cum lateribus capitis et colli subflavicantibus, pectore et jugulo maculis magnis fuscis notatis.*

Above clear olivaceous, of exactly the same shade over all the upper parts; below white, strongly shaded with olive-gray on the sides and flanks, the throat, breast, and sides of the neck and head strongly tinged with yellowish, the fore parts, excepting the throat, marked with numerous large, broad, dusky spots, which extend backward on the breast and belly, there rather paler, and more like the olivaceous of the upper parts. Edges of eyelids yellowish, forming a strong orbital ring; lores the same. Mouth yellow; bill blackish, the basal half of lower mandible pale; iris dark brown; feet pale ashy-brown. Length of ♂, 7–7½; extent, 12–12½; wing, about 4; tail, about 3; bill, ½; tarsus, 1$\frac{1}{10}$. ♀ averaging smaller—6¾+ extent, 11½+; &c.

b. ALICIÆ.— ♂ ♀ *Olivaceus, lateribus capitis concoloribus, jugulo vix flavido-tincto. Major; rostro longiore, graciliore; long. tot.* 7½–8; *alar. exp.* 12½–13½; *ala* 4+, *cauda* 3+.

Similar to *swainsoni;* sides of the head like the back, or merely more grayish; the distinct yellowish orbital ring and lores of *swainsoni* not being seen, or but faintly indicated. Breast but slightly tinged with yellowish. Rather larger than *swainsoni*, the length averaging rather over the maximum of the latter, sometimes exceeding 8 inches, and other dimensions to correspond bill rather over ½ an inch, and comparatively slenderer than in *swainsoni.*

c. USTULATUS.— ♂ ♀ *Rufo-olivaceus; cæteris T. swainsoni sat similis.*

This form is entirely like *swainsoni* proper, excepting in a rufous shade o the olive of the upper parts approaching that of *fuscescens*, from which it is distinguished by the different tone and pattern of the coloration of the under parts. These characters, which it shares with *swainsoni*, distinguish it from *aliciæ*, no less than does the shade of the upper parts. It is simply the more rufous phase of *swainsoni* from the northwest coast region.

T. aliciæ is more decidedly different from *swainsoni* in the characters note above, and is held by many excellent ornithologists as a distinct species. The interrelationships are treated in my "Birds of the Northwest", and more fully in the "History of North American Birds".

ONE of the most peculiar traits of the Olive-backed Thrush is its erratic disposition. If not a greater vagabond than the Robin itself, this Thrush commonly wanders further south than any of its relatives; its journeying into distant portions of South America being conspicuous. While the rest of our Thrushes which leave the United States in the autumn rarely if ever pene-

trate beyond the Isthmus, the Olive-backed Thrush has appeared in Ecuador, Peru, and Brazil, as recorded by Sclater, Cabanis, and von Pelzeln, respectively. It likewise occurs in Cuba and in Greenland, and, like all our other *Hylocichlæ*, excepting the Wood Thrush, has been reported from Europe. There is also a record of its presence in Siberia; though very possibly the actual reference in this case is to the variety *aliciæ*, lately accredited by Taczanowski to the same country. Its dispersion over the eastern portions of North America is general. The southern limit of its usual breeding-range has been fixed by Dr. Brewer in Massachusetts, but I am under the impression that such restriction requires to be removed. I have mislaid a reference I once possessed to its breeding in Connecticut and in the mountains of Pennsylvania, and cannot now recall the authority; but such extension of its range in summer agrees better with the accounts of some of the earlier writers as well as with what we now know of its distribution during the same season in the West. Late observations have informed us of its westward extension beyond the main chains of the Rocky Mountains. My correspondent, Mr. T. M. Trippe, found the bird in Colorado Territory in May and September; and on one occasion in October, when the snow lay a foot deep on the ground, he observed it in company with various other species which had gathered about the Hot Sulphur Springs, in the Middle Park, apparently attracted by the warmth of these tepid pools. "In the vicinity of Denver," says Mr. H. W. Henshaw, "the species makes its appearance about the 10th of May; and by the 17th the thickets and partially open ground in swampy localities were fairly swarming with these birds. They were perfectly silent, and busied themselves after the usual manner of the family in scratching and seeking among the leaves for food. The males preceded the arrival of the females by at least a week." The most explicit accounts from the Far West are, however, those given by Mr. Ridgway, in his still unpublished Report on the Birds observed during Clarence King's Survey of the Fortieth Parallel. I quote from proof-sheets which he kindly placed at my service: "Swainson's Thrush is a very abundant species among the Wahsatch Mountains, and is, in fact, one of the most characteristic summer birds of that region. It there breeds plentifully in the cañons, where its song may be heard almost continually during the nesting-season. . . . . Numerous nests were found among the thickets bordering the

streams; they were generally situated about five or six feet from the ground, in the willows or other shrubs, near the water."

This paragraph leads me to speak at once of another peculiarity of the Olive-backed Thrush in comparison with all its congeners, excepting, of course, its two varieties *aliciæ* and *ustulatus*. I refer to its laying speckled eggs in a nest several feet from the ground. The Wood Thrush, indeed, builds in bushes and low trees; but then its eggs are whole-colored, like those of the Veery and Hermit, both of which nestle on or very near the ground. In high Arctic regions, whither many of Swainson's Thrushes resort for the summer, the nest has been frequently observed on the stunted vegetation not a yard from the ground; but, in more favored places, the altitude is usually about a man's height. The nest is more compact and more elaborately finished than those of the ground-builders, the Veery and Hermit, the outer portions of which are coarser and less consistent. The material is very miscellaneous, and varies, moreover, with the locality; but mosses, lichens, leaves, bark-strips, and fibrous weedy substances are usually found, while in some the *Hypnum* mosses are said to be most conspicuous, and to give a distinctive character. In size, the nests are only about four inches in diameter by half as much in depth; the walls being about half an inch thick. The eggs, numbering four or five, measure about seven-eighths of an inch in length by five-eighths in breadth; but much variation, both in size and shape, has been observed. They are light greenish-blue in color, fully speckled with reddish-brown and other shades. Any Thrush's eggs like this found in a nest above the ground, described by early authors, were almost certainly those of the Olive-backed Thrush, to whatever species they may have been accredited.

As to the general habits of this bird in comparison with those of its congeners, there is little to be said, since they are scarcely distinctive. It is perhaps less decidedly terrestrial and less solicitous of concealment than the Hermit, being often observed in open woodland, and gleaning much of its food among the branches of trees. I do not think that I have ever recognized its voice, excepting the short single note which is much the same as that of its allies. Dr. Brewer describes it as having a certain resemblance to that of the Hermit, yet quite distinct; "it is more prolonged; the notes are more equal and

rise with more regularity and more gradually, are richer, and each note is more complete in itself. Its song of lamentation, when robbed of its young, is full of indescribable pathos and beauty, haunting one who has heard it long after."

Wilson's Thrush, or Veery

Turdus (Hylocichla) fuscescens

Little Thrush, *Latham*, Syn. ii. pt. i. 1783, 20 No. 5 (not of Pennant).

Turdus minor, *Gm.* SN. i. pt. ii. 1788, 809, No. 32 (in part; mixed with *swainsoni*).

Turdus mustelinus, *Wils.* AO. v. 1812, 98, pl. 43, f. 3 (*nec Gm., nec auct.*).

Turdus fuscescens, *Steph.* Shaw's GZ. x. 1817, 182.—*? Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Bd.* BNA. 1858, 214.—*Scl.* PZS. 1859, 326 (critical).—*Scl.* Ibis, 1861, 282—*Gund.* J. f. O. 1861, 324 (Cuba).—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 326 (New Granada). *Coues & Prent.* Smiths. Rep. for 1861, 1862, 404.—*Scl.* Cat. AB. 1862, 2.—*Hayd.* Tr. Am. Philos. Soc. 1862, 158.—*Verr.* Pr. Essex Inst. iii. 1862, 145.—*Blakist.* Ibis, v. 1863, 58 (Saskatchewan).—*Bd.* Rev. AB. 1864, 17.—*All.* Pr. Ess. Inst. iv. 1864, 56.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 281.—*McIlw.* Pr. Ess. Inst. v. 1866, 84 (Canada West).—*Coues,* Pr. Ess. Inst. v. 1868, 266.—*Coues,* Pr. Bost. Soc. xii. 1868, 106.—*Allen,* Mem. Bost. Soc. i. 1858, 493, 514.—*All.* Am. Nat. ii. 1868, 489.—*Pelz.* Orn. Bras. ii, 1868, 92.—*Turnb.* B. E. Pa. 1869, 21; Phila. ed. 14.—*Ridg.* Pr. Phila. Acad. xxi. 1869, 127 (critical).—*Mayn.* Nat. Guide, 1870, 90.—*Abbott,* Am. Nat. iv. 1870, 540, 541.—*Mayn.* Pr. Bost. Soc. xiv, 1871, —.—*Stevenson,* U. S. Geol. Surv. Terr. for 1870, 1871, 463.—*All.* Bull. MCZ. ii. 1871, 256; iii. 1872, 155, 173 (Colorado).—*Mayn.* B. Fla. 1872, 10.—*Coues,* Key, 1872, 73.—*Edit.* Am. Nat. viii. 1874, 271.—*Gundl.* J. f. O. 1872, 405 (Cuba).—*Mayn.* Pr Bost. Soc. xiv. 1872, 357.—*Coues,* BNW. 1874, 5; *Trippe, ibid.* 228 (Colorado).—*Allen,* Pr. Bost. Soc. xvii. 1874, 48 (Dakota).—*B. B. & R.* NAB. i, 1874, 9, pl. i. f. s.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.

Turdus fuscesens, *Barn.* Smiths. Rep. for 1860, 1861, 435.

Turdus silens, *Vieill.* EM. ii. 1823, 647 (= *mustelinus Wils.; nec silens Sw.*).

Turdus wilsonii, *Bp.* Journ. Phila. Acad. iv. 1824, 34 (based on *mustelinus Wils. nec Gm.*).—*Bp.* Ann. Lyc. N. Y. ii. 1826, 76.—*Peab.* Rep. Orn. Mass. 1839, 306.—*Aud.* OB. ii. 1834, 362, pl. 164.—*Aud.* Syn. 1839, 90.—*Aud.* BA. iii. 1841, 27, pl. 145.—*Cab.* Fn. Peru. 1845-46, 188.—*Cab.* Arch. f. Naturg. 1847 (i), 205.—*Homeyer,* Rhea, ii. 1849, 148 (monog.).—*Hoy,* Pr. Phila. Acad. vi. 1853, 310 (Wisconsin).—*Thomps.* Vermont, 1853, 79.—*Read,* Pr. Phila. Acad. vi. 1853, 398 (Ohio).—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 601.—*Pratten,* Tr. Ill. Agric. Soc. i. 1855, 601.—*Hoy,* Smiths. Rep. for 1864, 1865, 437 (Missouri).—*Trippe,* Pr. Essex Inst. vi. 1871, 115.

Turdus wilsoni, *Bp.* C. & GL. 1838, 17.—*Bp.* CA. i. 1850, 271.—*Gund.* J. f. O. 1855, 470 (Cuba).—*Putn.* Pr. Ess. Inst. i. 1856, 209.—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Gund.* J. f. O. 1861, 405 (Cuba).

Merula wilsonii, *Brew.* Pr. Bost. Soc. 1844, 191.

Merula minor, *Sw. & Rich.* FBA. ii. 1831, 179, pl. 36.—*? Denny,* PZS. 1847, 38.

Turdus minor, *Less.* Tr. Orn. 1831, 408.—*D'Orb.* La Sagra's Cuba, Ois. 1840, 47, pl. 5.—*Degl.-Gerbe,* OE. i. 1867, 424 (Europe).

Turdus bruneus, *Brew.* Journ. Bost. Soc. vi. 1852, 304 (chars. and habits).—*Cabot,* Naum. Bd. ii. Hft. iii. 1852, 66 (Lake Superior).

Merle grivette, *Degland-Gerbe.*

CH. SP.— ♀ ♂ *Rufo-brunneus, cauda concolore; infrà albus, lateribus canis, jugulo tantum pallidè flavo-brunnescente, maculis minimis, sparsis, sagittatis fuscis notato.*

Entire upper parts reddish-brown, with a faint olivaceous tinge; no contrast of color between back and tail; quills and tail-feathers darker and

purer brown, the former with white or buffy spaces at the concealed bases of the inner webs, as usual in this subgenus. No orbital light ring around the eye; auriculars only obsoletely streaky. Below, white; the sides shaded with hoary-gray or light grayish-olive; the jugulum buff-colored, contrasting strongly with the white of the breast, and marked with a few small brown arrow-heads, the chin and middle line of throat, however, nearly white and immaculate. A few obsolete grayish-olive spots in the white of the breast; but otherwise the markings confined to the buff area. Bill dark above, mostly all pale below, like the feet. ♂, 7–7½; extent, about 12; wing, 4–4¼; tail, 3–3¼; bill, ⅜; tarsus, 1⅛. ♀ averaging smaller.

I have not observed a very early spotted and streaked stage of plumage, which, however, is presumed to occur, as in other species of this group. The sexes are alike in color, and the seasonal changes are slight. The differences consist mainly in the stronger reddishness of the upper parts, or its tinging with an appreciable shade of olivaceous. But the upper parts are never of the decidedly olive shade seen in *swainsoni* and in the fore parts of *pallasi*. The color of the upper parts, however, viewing its occasional shading toward olive, is less strongly distinctive of the species than the peculiar coloration of the under parts is. The pinkish-buff of the jugulum, restricted and sharply contrasting with the white of the breast, and its few small brown (not black or even blackish) spots, which do not extend into the white of the breast, are perfectly characteristic, as are the absence of a decided yellowish orbital ring and of distinct streaks on the auriculars.

A curious malformation is exhibited in a specimen in Mr. Ridgway's collection, in which the upper mandible is overgrown, and as much hooked at the end as that of a Shrike.

The average dimensions of a large series of specimens of both sexes are :— Length, 7.35; extent, 11.75; wing, 3.90; tail, 2.85; tarsus, 1.12.

WILSON'S Thrush is another species which, a few years ago, could not have been properly brought into the present connection, owing to our lack of knowledge of its extreme western limits. The first authentic record of its occurrence in the Rocky Mountains is, I think, that given in 1858 by Professor Baird, who received a specimen from Fort Bridger, Utah. Latterly, Mr. J. A. Allen found the bird in Colorado Territory, where Mr. Trippe also observed it, in July, at an elevation of over 8,000 feet, and where it was doubtless breeding. Both Mr. Ridgway and Mr. Henshaw discovered it to be an abundant species in Utah and Colorado, and the former regarded it as one of the most characteristic birds of the valleys of the Provo, Bear, and Weber Rivers in Utah. Two nests were found by the latter near Fort Garland, Colorado, at nearly the altitude just mentioned; one of them was curiously built above an old nest of the previous season, which had been remodeled for the purpose. As Mr. Henshaw remarks, though the Veery is thus common on the northern confines of the Colo-

rado Basin, no one appears to have found it in New Mexico or Arizona. It must consequently take a somewhat circuitous route in gaining its winter home in Central America, unless perchance it migrates at a considerable elevation along the mountain-chains. The latter supposition seems more probable, since Professor Sumichrast has observed it in Orizaba in Mexico. Its general northward dispersion appears to be more restricted than that of either the Hermit or the Olive-backed Thrush, being perhaps coincident with the limit of arboreal vegetation. In Cuba, it is one of the commoner species of the genus. A few linger through the winter in our Gulf States, but the majority leave our shores for the more genial climate of subtropical America, and proceed as far as Panama—in exceptional cases still farther, as in the instance noted by A. von Pelzeln, of an occurrence at San Vicente, Brazil, in December. There is even a record of the appearance of the bird in Europe; but I understand that this is open to doubt. It will be seen that its distribution is much like that of the Hermit and the Olive-backed, yet on the whole somewhat restricted, though less so than that of the Wood Thrush. Its breeding-range, similarly, is more southerly, approximating to that of the Wood Thrush; it includes the Northern, Eastern, and some of the Middle States, and an adjoining belt of country in British America; while in the Rocky Mountains it stretches southward to the confines of New Mexico and Arizona.

The Veery's mating and nest building season, when the bird is in full song, is the genial month of May, in most parts of the United States; and two broods may be reared under propitious surroundings. But further northward, where alone have I myself found the bird in its home, and heard its seductive epithalamium, the shorter span of the summer season suffices but for a single brood. The yearly crisis of the bird's life is delayed till June, and the young are not seen abroad till the latter part of that month, if indeed before July. The heavy growth of timber that fringes the streams includes many nooks and dells, and broken ravines overgrown with thick shrubbery, from out the masses of which the tall trees tower, as if stretching forth their strong arms in kindly caressing of the humbler and weaker vegetation, their offspring. In such safe retreats, where the sombre shade is brightened here and there with stray beams of sunlight, in the warmth of which myriads of insects bathe their wings and flutter away their little span of life,

humming a quaint refrain to the gurgle of the rivulet, the Veery meets his mate—the song rises—the wooed is won—the home is made. Should we force our unwelcome presence upon the bird who is brooding her newly-found treasures with the tenderest solicitude, she will nestle closer still, in hope of our passing by, till we might almost touch her; when, without a word of remonstrance or reproach, she takes a little flight, and settles a few yards away, in silent appeal. If the time, the place, the scene, suffice not for our forbearance, with what poor words of hers may we then be moved?

The nest will be found at our feet, most likely beneath some bush, resting upon a bed of leaves, or supported in the forks of some stems that spring directly from the ground. It seems large for the size of the bird, and perhaps not so neat and finished as we might expect; for the Veery, though a patient and faithful housekeeper, cares little for appearances. Among the various materials which enter into its composition, withered leaves form a large part, especially of the outer walls, while grass-stems, weed-stalks, and bark-strips are more compactly woven inside. There is no special lining of the interior, and the cavity is small. The nest may contain four, perhaps five, eggs, like those of the Hermit, greenish-blue, without markings, except in rare instances, when a few specks appear, especially about the larger end.

Varying estimates have been made of the Veery's powers of song. For myself, I rate this bird as one of the sweetest of our songsters, of whose "clear bell-like notes, resonant, distinct, yet soft and of indescribable sadness", I have spoken on a former occasion. I think Dr. Brewer's faint praise the most cruelly unjust of all; can he have ever heard the Veery's full utterance, and then have written, "The song of this thrush is quaint, but not unmusical; variable in its character, changing from a prolonged and monotonous whistle to quick and almost shrill notes at the close"? He speaks as he might of a hurdy-gurdy, instead of an exquisite oboe. No one of the voices of the woodland is less quaint than the Veery's; no one is truer to its theme, more measured in its cadences, or softer and clearer in tone than that of the Veery—rival of the Olive, the Hermit, and the Wood Thrush, completing the quartette of silver-tongued *cantatrices*, who pledge the promises of spring-time in choral symphony.

Subfamily MYIADESTINÆ

Flycatching Thrushes

The essential character of this group has been indicated on a preceding page. It has usually been associated with *Ptilogonys* and *Phœnopepla* in the family (*Ampelidæ*) which contains the Cedar Bird and Bohemian Waxwing; from all these birds, however, the booted tarsi, speckled state of the young, and other characters sufficiently distinguish it. In comparison with the Thrushes, among which it is now located, it differs in the shorter, broader, more depressed, and flycatcher-like bill, with its deeply-cleft rictus and very short gonys, the smaller and weaker feet, and in the peculiarly double-marginate tail, the feathers of which taper gently from base to tip. It is a small group, nearly confined to the warmer portions of America, comprising only two or three genera, the leading one of which is the—

Fig. 5.—Details of external form of *Myiadestes* (*M. townsendi*): bill and feet natural size; wing and tail ¾.

Genus MYIADESTES, Sw.,

which was established by Mr. William Swainson, in 1838, in his arrangement of the Flycatchers, a work forming part of Sir William Jardine's "Naturalists' Library". It consists of ten or twelve species, only one of which occurs within our limits, the others being more southerly. In addition to the characters just noted, it may be observed that the species of *Myiadestes* agree in their rather uniform dark or dull coloration, variegated with brighter tints on the wings. They form part of an interesting

and somewhat isolated group, having no very intimate relations with the other birds of our country, inhabiting woodland and shrubbery, feeding on insects and berries, and capable of musical expression in an exalted degree.

Townsend's Flycatching Thrush

Myiadestes townsendi

Ptilogonys townsendi, *Aud.* OB. v. 1839, 206, pl. 419, f. 2.—*Aud.* Syn. 1839, 46.—*Nutt.* Man. 2d ed. i. 1840, 361.

Ptilogonys townsendii, *Aud.* BA. i. 1840, 243, pl. 69.—*Gamb.* Pr. Phila. Acad. i. 1843, 261 (California).—*Gamb.* Pr. Phila. Acad. iii. 1847, 157 (California).—*Heerm.* Journ. Phila. Acad. ii. 1853, 262.—*Woodh.* Sitgreave's Rep. 1853, 76.—*Henry,* Pr. Phila. Acad. viii. 1855, 308 (New Mexico).

Ptiliogonys townsendii, *Gamb.* Journ. Phila. Acad. i. 1847, 40.—*Newb.* PRRR. vi. 1857, 82.

Culicivora townsendi, *DeKay,* N. Y. Zool. ii. 1844, 110.

Myiadestes townsendii, *Cab.* Arch. f. Nat. 1847 (i), 208.—*Baird,* BNA. 1858, 321.—*Henry,* Pr. Phila. Acad. xi. 1859, 106 (New Mexico).—*Kenn.* PRRR. x. 1859, 25.—*Heerm.* PRRR. x. 1859, 38.—*Xantus,* Pr. Phila. Acad. xi. 1859, 191 (California).—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 162.—*Lord,* Pr. Roy. Arty. Inst. iv. 1864, 116.—*Coues,* Pr. Phila. Acad. xviii. 1866, 72 (Arizona).—*Bd.* Rev. AB. 1866, 429, fig.—*Coop.* Am. Nat. iii. 1869, 34.—*Coop.* B. Cal. i. 1870, 134, figs.—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 464.—*Allen,* Bull. MCZ. iii. 1872, 176.—*Coues,* Key, 1872, 117, f. 57.—*Coues,* BNW. 1874, 93.

Myiadestes townsendi, *Scl.* PZS. 1857, 5.—*Scl.* PZS. 1858, 97.—*Coues,* Ibis, 1865, 163 (Arizona).—*Aiken,* Pr. Bost. Soc. xv. 1872, 198 (Colorado).—*B. B. & R.* BNA. i. 1874, 406, pl. 18, figs. 3, 4.—*Henshaw,* Zool. Expl. W. 100th Merid. 231 (in press).

Myiadestes obscurus, *Bp.* CA. i. 1850, 336 (in part; includes *townsendi*). (Not of Lafr.)

Townsend's Ptilogonys, *Aud.* l. c.

Townsend's Flycatching Thrush, *Coues,* l. c.

Townsend's Solitaire, *B. B. & R.* l. c.

Hab.—Western United States, from the easternmost foothills of the Rocky Mountains to the Pacific and British Columbia. Not known to penetrate any distance into Mexico, where replaced by other species.

Ch. sp.—♂ ♀ *Sordide cinereus, infra dilutior, gula crissoque albicantibus; alis nigricantibus, fulvo bisignatis; cauda nigricante, rectrice extima albo-limbata, rectrice proxima albo-terminata; orbitis albis; rostro pedibusque nigris.*

♂ ♀.—General color dull brownish-ash, paler below, bleaching on the throat, lower belly, and crissum. Wings blackish, the inner secondaries edged and tipped with white, nearly all the quills extensively tawny or fulvous at the base, and several of the intermediate ones again edged externally toward their ends with the same color. In the closed wing, the basal tawny shows upon the outside as an oblique spot in the recess between the greater coverts and the bastard quills, separated by an oblique bar of blackish from the second tawny patch on the outer webs of the quills near their ends. Tail like the wings (the middle pair of feathers more nearly like the back); the outer feather edged and broadly tipped, the next one more nar-

rowly tipped, with white. A white ring around the eye. Bill and feet black. Eye brown. Length, about 8 inches; wing and tail about equal, 4–4½; the latter forked centrally, graduated laterally; bill, ½; tarsus, ¾; middle toe and claw rather more.

Young:—Speckled at first, like a very young Thrush. Each feather with a triangular or rounded spot of dull ochraceous or tawny, edged with blackish.

AMONG the birds of our Western country, Townsend's Thrush is almost the only one of general distribution which I have never been able to study in its native haunts. Until very lately, the Dipper was another which had always given me the slip; but, during the summer of 1874, I added that sprightly and vivacious ornament of the mountain-torrent to the list of my personal friends, and in good time, perhaps, I shall come to know the Flycatching Thrush as well. In penning an account of this stranger for the "Birds of the Northwest", I could only state that I had found it rather rare, in summer, in the upper portions of Arizona, and gather from my correspondents, or from the published records of other observers, some items of its life-history. I would refer to this article, however, as a fair epitome of what was then known, and, avoiding repetition, can now supplement it with some further particulars, the principal of which relate to the nidification of the species.

None of the earlier observers appear to have ever found the nest of this bird; and to this day the eggs remain unknown. A few years ago, however, Mr. Ridgway discovered a nest, an account of which was communicated to Dr. Brewer, and published in substance in the work above quoted. The original notice, as prepared and printed (but up to the date of present writing, February 8, 1876, remaining unpublished), I am able to quote through the kindness of the writer, who has placed at my service the proof-sheets of his report on the birds observed during the Exploration of the Fortieth Parallel by Clarence King:—

"In July, 1867, we found a nest of this species in a deep ravine on the western slope of the Sierra Nevada, at an altitude of about 5,000 feet. This nest was placed in a cavity of the rocks forming the perpendicular upper bank of a sluice, constructed for mining purposes, and through which ran the water of a considerable mountain-stream. The nest, which was about a foot above the water, was nearly as bulky as that of the Brown Thrasher (*Harporhynchus rufus*), and similarly con-

structed; it contained four young. When we approached it, the female was much excited, flying before us or running upon the ground in the manner of a thrush, a species of which she was at first thought to be, from her entirely thrush-like manners and appearance. Even afterward, and until the species was identified by obtaining specimens, we were led into this delusion, its gliding, noiseless flight, and graceful running upon the ground being so perfectly thrush-like."

This curious fact, which would never have been anticipated, of the nesting of the bird in the rifts of rocks, is corroborated by the later observations of Mr. Henshaw, whose article, as prepared for the zoological volume of the Reports upon Explorations West of the One Hundredth Meridian—a work which will doubtless issue from the press during the present year—is to the following effect:—During a week's stay in June, at the base of Baldy Peak, in Colorado, he frequently saw this bird in the pine forests, and as high up on the mountain sides as 10,000 feet; its summer range doubtless extends up to timber line. Its habits, as far as he noticed them, are singularly like those of the Bluebirds. Besides a loud, liquid call note, the male has a beautiful warbling song, which somewhat resembles that of the Purple Finch, but far excels it in power, sweetness and modulation. Though he searched carefully for the nest, he only succeeded in satisfying himself that the bird breeds in the crevices of rocks. Its preference for such localities during the summer, with the evident solicitude manifested on more than one occasion, left little doubt in his mind on this point.

The birds are quite common (Mr. Henshaw continues), in the fall, in Eastern Arizona and Western New Mexico. Having reared their young, they appear to forsake the pine woods, which constitute their summer abode, and are seen lower down, on the hillsides covered with piñons and cedars. Their food at this season appears to consist almost exclusively of berries, particularly of the piñons and cedars, and the crops of many examined contained little else save a few insects. Though in summer a bird of retiring and unsocial habits—never more than a single pair being found in one locality—in the fall they are to a considerable extent gregarious, associating usually in small companies of from five to ten. At the Old Crater, forty miles south of Zuñi, they had congregated in very large numbers about a spring of fresh water, the only supply for many miles around; and hundreds were to be seen sitting on the

bare volcanic rocks, apparently too timid to venture down and slake their thirst while we were camped near by. Their song is occasionally heard even in November and December, and is very sweet, but not so full and varied as during the vernal season.

The sociable disposition which Townsend's Thrush manifests during the winter, contrasting with those traits it shows at other seasons so conspicuously that it has acquired the *soubriquet* of "Solitaire", is also attested by Mr. J. K. Lord, from observations made at Colville during November, when the leaves had fallen, snow covered the ground, and the cold was intense. His attention was attracted by the sound of singing, unusual at that inclement season; and he soon discovered a score of these brave little birds perched upon the sprays of some thorn-bushes, and was reminded, by their low, sweet notes, of the Song Thrush of Europe. Commend me to the rare bird that sings in winter, whose pipe, yet limpid when the rivers cease to flow, is tuned to sounds harmonious amid the discord of the elements, in earnest of more genial times to come!

Subfamily MIMINÆ: Mocking Thrushes

Chars.—There is little to be added to the comparative diagnosis of this group already given (p. 5). The tarsi are scutellate anteriorly, with seven scales (rarely obsolete, as sometimes occurs in *Galeoscoptes*). The wings are short and rounded—usually shorter than the tail, the feathers of which are graduated in length. There are bristles about the base of the bill, but the feathers themselves are soft. The bill is extremely variable in length and shape; sometimes it is much shorter than the head, and as straight as that of a typical Thrush, but in other cases it equals or exceeds the head in length, and is bent like a bow. The members of this group have been sometimes classed with the Wrens, to which they bear a strong resemblance in many respects. They are peculiar to America, and abound in species in the warmer parts of this hemisphere. In its broader features, the economy of these birds is much the same as that of the true Thrushes. They are insectivorous, but also feed on various soft fruits. They inhabit shrubbery rather than high open woodland, and as a rule keep nearer the ground, some of the species being decidedly terrestrial, as indicated by their large strong feet. Their nidification is inartistic; the stout bulky nests are

placed in bushes; the eggs are three to six in number, usually speckled (the Catbird furnishes an exception to this last statement). In this group, the vocal powers are carried to the highest known degree, some of the species being able to imitate not only the notes of other animals, but various sounds which are mere noises, without musical quality.

There are three North American genera of this subfamily, all of which are represented in the Colorado Basin. Although the generic characters are not very strongly marked (all the species used to be placed in the single genus *Mimus*), tangible differences will be observed on comparing the diagnoses given.

Genus OROSCOPTES Baird

CHARS.—Wings and tail of equal lengths, the former more pointed than in the other genera of *Mimin*æ, with the first quill not half as long as the second, which is between the sixth and seventh; the third, fourth, and fifth about equal to each other, and forming the point of the wing. Tail nearly even, its feathers being but slightly graduated. Tarsus longer than the middle toe and claw, anteriorly distinctly scutellate. Bill much shorter than the head, not curved, with obsolete notch near the end. Rictal bristles well developed, the longest reaching beyond the nostrils.

O. montanus is the type and only known species of this genus.

Mountain Mockingbird

Oroscoptes montanus

Orpheus montanus, *Orn. Comm.* Journ. Phila. Acad. vii. 1837, 193 (Columbia River).—*Aud.* Syn. 1839, 89.—*Aud.* BA. ii, 1841, 194, pl. 139.—*Henry,* Pr. Phila. Acad. vii. 1855, 310 (New Mexico).

Turdus montanus, *Aud.* OB. iv. 1838, 437, pl. 369, f. 1.

Turdus (Orpheus) montanus, *Towns.* Journ. Phila. Acad. viii. 1839, 153.

Mimus montanus, *Bp.* C. & GL. 1838, 17.—*Gamb.* Pr. Phila. Acad. iii. 1846, 114 (California).—*Gamb.* Journ. Phila. Acad. i, 1847, 42.—*Bp.* CA. i. 1850, 276.—*McCall,* Pr. Phila. Acad. v. 1851, 216 (Texas).—*Woodh.* Expl. Zuñi River, 1853, 73.—*Heerm.* PRRR. x. 1859, 44.

Oroscoptes montanus, *Bd.* BNA. 1858, 347.—*Coues,* Pr. Phila. Acad. xviii, 1866, 65 (Arizona).

Oreoscoptes montanus, *Scl.* PZS. 1859, 340 (critical).—*Henry,* Pr. Phila. Acad. xi. 1859, 107 (New Mexico).—*Bd.* Ives' Rep. Expl. Colorado, pt. v. 1861, 6.—*Hayd.* Tr. Am. Phil. Soc. xii. 1862, 163 (Black Hills).—*Bd.* Rev. AB. 1864, 42.—*Dress.* Ibis, 1865, 482 (Texas).—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Laredo, Tex.).—*Coop.* Am. Nat. iii. 1869, 73.—*Coop.* Pr. Cala. Acad. 1870, 75 (Colorado River).—*Coop.* B. Cal. i. 1870, 13.—*Stev.* U. S. Geol. Surv. for 1870, 1871, 464.—*Hold.* Pr. Bost. Soc. 1872, 194 (Black Hills).—*All.* Bull. MCZ. iii. 1872, 174.—*Coues,* Key, 1872, 74.—*Merr.* U. S. Geol. Surv. for 1872, 1873, 670, 705, 712, 713.—*Ridg.* Bull. Ess. Inst. v. 1873, 179.—*Coop.* Am. Nat. viii. 1874, 17.—*Allen,*

Pr. Bost. Soc. xvii. 1874, 97 (Yellowstone River).—*Coues*, BNW. 1874, 7, 228.—*B. B. & R.* NAB. i. 1874, 31, fig. pl. 3, f. 6.—*Yarr.* Rep. Orn. Specs. 1874, 34.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 6.—*Hensh.* Rep. Orn. Specs. 1874, 40, 71, 97.—*Hensh.* List B. Ariz. 1875, 150.*—*Nelson*, Pr. Bost. Soc. xvii. 1875, 339, 349, 352, 355 (California, Nevada, Utah).

Mountain Mockingbird; Sage Thrasher. *Vulg.*

HAB.—United States, from the Rocky Mountains to the Pacific; eastward to the Black Hills and Fort Laramie. Texas and Lower California.

CH. SP.— ♂ ♀ *Griseo-cinereus; infrà albidus, fusco-maculatus; alis caudâque fuscis, illis albo-bifasciatis et limbatis, hac albo-terminatâ; rostro pedibusque nigricantibus.*

♂ ♀, in summer: Above, grayish or brownish ash, the feathers with obsoletely darker centres. Below, whitish, more or less tinged with pale buffy-brown, everywhere marked with triangular dusky spots, largest and most crowded across the breast, small and sparse, sometimes wanting, on the throat, lower belly, and crissum. Wings fuscous, with much whitish edging on all the quills, and two white bands formed by the tips of the greater and median coverts. Tail like the wings; the outer feather edged and broadly tipped, and all the rest, excepting usually the middle pair, tipped with white in decreasing amount. Bill and feet black or blackish, the former often with pale base. Length, about 8 inches; wing and tail, each 4 or rather less (not nearly 5, as given by Baird and copied in my "Key"); tarsus, $1\frac{1}{8}$; bill, $\frac{3}{4}$.

Young: Dull brownish above, conspicuously streaked with dusky; the markings below streaky and diffuse.

Specimens differ little with sex or season, or with age after the first streaked stage is passed. The individual variation consists in the purer or more brownish ash of the upper parts, and especially in the shade of the under parts, which ranges from whitish to a decided brownish-cinnamon cast, and in the amount of spotting. Ordinarily, the lower belly and vent, and sometimes the throat, are immaculate, but the whole under surface is sometimes pretty uniformly covered. The brownish shade is usually strongest on the breast, flanks, and crissum. The newly-grown quills and tail-feathers are darker than the old ones, and have more white edging. The wing-coverts are sometimes edged as well as tipped with white.

THIS interesting species resembles a Mockingbird—especially a young one, before the spots on the under parts are lost—in many respects, but differs altogether in the quality of its song, and shares much of the ground-loving nature of a

*Since these references to Messrs. Yarrow and Henshaw's writings (which are important in the present connection) may not be generally understood, it should be stated that "*Rep. Orn. Specs.*" refers to a pamphlet (8vo, pp. 148) published at the office of the United States Geographical and Geological Explorations and Surveys West of the One Hundredth Meridian, under auspices of the Engineer Department of the United States Army, relating to the collections made by the gentlemen named in 1871, 1872, 1873, containing five separate papers, one of which is an "Annotated List of the Birds of Utah", republished from Ann. Lyc. N. H. New York, xi, 1874; and that "*List B. Ariz.*" refers to a paper by Mr. Henshaw in Appendix LL of Annual Report of Chief of Engineers of the United States Army for 1875; the pagination being given according to the separately-printed pamphlet edition of this Appendix (8vo, pp. 196). These papers are full of interesting field-notes, and bear directly upon the subject in hand.

Thrasher. It was one of the birds discovered by Mr. J. K. Townsend, who, with his some time companion Nuttall, explored the region of the Columbia, bringing many ornithological novelties to light. Nuttall speaks of its pleasant song, which he says resembles that of the Thrasher, and ascribes to it powers of imitation; but as his statement of such ability has not been since corroborated, we are left to infer that it possesses nothing beyond the flexible modulation of the voice for which all its tribe are famous. He discovered a nest, situated in a wormwood-bush, containing four eggs. The original accounts of the species constituted the sum of our information respecting it for many years, until the general opening-up of almost untrodden wastes put other eager and curious observers upon its track. From what we have learned, it would appear to have been misnamed the Mountain Mockingbird, since, as has been intimated, its *repertoire* is not remarkably extensive, while its favorite haunts are the arid and desolate sage plains of the great central plateau. We are now pretty well acquainted with its geographical distribution, though more precise knowledge of its movements would be acceptable. It is migratory, like most of its tribe, but only within a limited area. It is known to be resident in Texas, where my friend H. E. Dresser, of London, observed it at San Antonio and Eagle Pass in winter and summer, and where he procured the eggs. He found it, like others, in brushy plains, and noticed its terrestrial habits. As well as I can judge from the accounts to which I have referred for information—having nothing original to present upon the subject—the bird offers one of the many instances of what I should call "*migration at will*", if I dared to propose a sort of paradoxical term. That is to say: out of the sum-total of individuals composing the species, congregated in their winter haunts, a certain percentage elects to go north in the spring, dropping loiterers by the way, while the rest breed where they wintered. In this manner, the species spreads latitudinally until the limit of its dispersion, which cannot be far from the northern boundary of the United States, is reached, and may be found nesting anywhere within the area it inhabits. In the fall the return movement is accomplished, and the species is then withdrawn into its comparatively narrow winter quarters, the limits of which I believe remain to be ascertained. This kind of optional or elective migration, witnessed in many other cases besides the present one, contrasts with the regular migration perforce

of those other species, all the individuals of which are mysteriously impelled to journey toward the pole, and settle for the summer in areas perhaps more contracted than their winter homes.

For the general habits of this species I shall presently quote Mr. Ridgway, who has made good use of the favorable opportunities he enjoyed; but will first describe the eggs, which I have examined in the National Museum at Washington. The clutch usually numbers four, measuring from 0.94 to 1.03 in length, and from 0.69 to 0.75 in breadth (inches and decimals). The ground-color is light greenish-blue; this is heavily marked with burnt-umber or olive-brown spots, and a few others of neutral tint. The pattern is generally bold and sharp, but in some cases finer and more diffuse, when the numberless speckles and dots give an effect similar to that of some styles of Mockingbirds' eggs.

Instead of collating the fragmentary notices of writers who have recorded their transient impressions or isolated observations, I shall conclude the history of the Mountain Mockingbird with an extract from the author last mentioned. Noting that it inhabits sage-plains, especially of the "Great Basin", and suggesting the name "Sage Thrasher" as more appropriate than "Mountain Mockingbird", Mr. Ridgway goes on to say, in his note-book now lying before me:—

"*Carson City, Nevada, March* 24, 1868.—To-day we saw the Sage Thrasher for the first time this spring, and heard its song. The sage-brush was full of the birds, and many were singing beautifully when the evening shades were lengthened by the sinking of the sun behind the Sierras. Owing to the earliness of the season, the song was uttered in a subdued tone, and its full merits could not be appreciated. The bird was generally seen sitting in an upright position upon a sage bush, but when approached would dive—apparently into the bush, though close examination failed to reveal its hiding-place; often, however, we again heard it sweetly warbling, perhaps a hundred yards away in the direction from which we had come. This concealed, circuitous flight is characteristic of the species.

"*April* 2.—Rained throughout the night; this morning the air is fresh and balmy; clouds are lowering about the bases of the mountains, concealing them from view. The air is vocal with the music of the spring birds, singing with vigor and joyousness. The Meadow Larks are singing throughout the

sage-brush, and with their rich notes are heard the sweet warblings of *Oroscoptes montanus*. To-day we heard this song in all its loveliness. Although weaker than that of either the Brown Thrasher or the Catbird, it is more varied and longer sustained as well as superior in sweetness and delicacy of tone. The song has, in modulation or style, a great resemblance to the soft tender warbling of the Ruby-crowned Kinglet, although it is stronger, of course, in proportion to the size of the bird.

"*April* 9.—The Sage Thrasher is now one of the most common birds in this vicinity. To-day a great many were noticed among the brush-heaps in the city cemetery. Its manners during the pairing season are peculiar. The males, as they flew before us, were observed to keep up a peculiar tremor or fluttering of the wings, warbling as they flew, and upon alighting (generally upon the fence or a bush), raised the wings over the back, with elbows together, quivering with joy as they sang.

"*April* 23.—Although we saw these birds everywhere among the sage-brush, their nests were found only with great difficulty. In the cemetery, the sage bushes had all been pulled up and thrown in piles in different parts of the inclosure, and upon these the birds were most frequently seen. On one occasion, a female was observed to fly into one of these brush-heaps, with a bunch of building material in her mouth; but it was only by taking off bush after bush that the nest was discovered; this, though unfinished, contained one egg, and, in its construction and situation, resembled some of the nests of the Thrasher, though less bulky. The bushes were carefully replaced, and the nest left undisturbed. In walking through the sage-brush on the open commons, several more nests were found, in similar situations, being placed in the thickest portion of the bushes, generally about two feet from the ground, but occasionally imbedded in the ground beneath them. They were all well concealed. At one time, while blowing some eggs, the parent birds came near us, running gracefully upon the ground in the manner of a Robin, stretching their necks, curious to see what we were doing, and watching our movements with an anxious look, but uttering no note whatever.

"The only note of this species, besides its song, is simply a weak '*tuck*', seldom uttered unless the young are disturbed; except during the pairing and nesting seasons, it is one of the most silent birds with which I am acquainted. In September I saw it feeding upon the 'service-berries,' which grew abundantly in certain localities at the foot of the mountains."

Genus MIMUS Boie

CHARS.—Bill much shorter than the head, scarcely curved as a whole, but with gently curved commissure, notched near the end. Rictal vibrissæ well developed. Tail rather longer than the wings, rounded, the lateral feathers being considerably graduated. Wings rounded. Tarsal scutella sometimes obsolete. Tarsi longer than the middle toe and claw.

Of this genus, there are two well marked sections, represented by the Mockingbird and Catbird respectively. These may be most conveniently distinguished by color:—

Mimus.—Above ashy-brown, below white; lateral tail-feathers and bases of primaries white. (Tarsal scutella always distinct.)

Galeoscoptes.—Blackish-ash, scarcely paler below; crown and tail black, unvaried; crissum rufous. (Tarsal scutella sometimes obsolete.)

The Mockingbird

Mimus polyglottus

Turdus polyglottos, *L.* SN. i. 10th ed. 1758, 169, no. 7 (based on Sloane, ii. 306, pl. 256, f. 3; Cates. i. 27; Kalm, ii. 335); 12th ed. 1766, 293, no. 10 (includes other spp. or vars.).—*Bp.* Journ. Phila. Acad. iv. 1824, 32 (critical).—*Bp.* Ann. Lyc. N. Y. ii. 1826, 74.

Turdus polyglottus, *Gm.* SN. i. 1788, 812.—*Lath.* IO. i. 1790, 339.—*Turt.* SN. i. 1806, 493.—*Wils.* AO. ii. 1810, 14, pl. 10, f. 1.—*Fox,* Newc. Mus. 1827, 150.—*Less.* Tr. Orn. 1831, 410.—*Aud.* OB. i. 1831, 108, pl. 21.—*Nutt.* Man. i. 1832, 320.—*Peab.* Rep. Orn. Mass. 1839, 300 (rare).—*Haym.* Pr. Phila. Acad. viii. 1856, 289.—*Gosse,* Alabama, 1859, 47.—*Gieb.* Vög. 1860, 37, f. 85.

Mimus polyglottus, *Boie,* Isis, 1826, 972.—*Bp.* C. & GL. 1838, 17.—*Gamb.* Pr. Phila. Acad. iii. 1846, 114 (California).—*Bp.* CA. i. 1850, 276.—*McCall,* Pr. Phila. Acad. v. 1851, 216 (Texas).—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Hoy,* Pr. Phila. Acad. vi. 1853, 309 (Wisconsin).—*Reed,* Pr. Phila. Acad. vi. 1853, 398 (Ohio).—*Woodh.* Expl. Zuñi R. 1853, 72.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 582 (Illinois).—*Lungersh.* J. f. O. 1856, 69 (in captivity).—*Scl.* PZS. 1857, 212 (Orizaba).—*Maxim.* J. f. O. vi. 1858, 179.—*Bd.* BNA. 1858, 344.—*Scl.* PZS. 1859, 340 (critical).—*Henry,* Pr. Phila. Acad. xi. 1859, 106 (New Mexico).—*Baird,* Pr. Phila. Acad. xi. 1859, 303.—*Kenn.* PRRR. x. 1859, 25.—*Heerm.* PRRR. x. 1859, 44.—*Wheat,* Ohio Agric. Rep. for 1860, 1861, 365, no. 115 (Ohio).—*Barn.* Smiths. Rep. for 1860, 1861, 436 (Pennsylvania).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 410 (Washington; rare).—*Scl.* Cat. AB. 1862, 8.—*Tayl.* Ibis, 1862, 128 (Florida).—*Bd.* Rev. AB. 1864, 48.—*Allen,* Pr. Essex Inst. iv. 1864, 67 (Massachusetts—northern limit).—*Hoy,* Smiths. Rep. for 1864, 1865, 437 (Missouri).—*Bry.* Pr. Bost. Soc. ix. 1865, 372.—*Coues,* Ibis, 1865, 159 (New Mexico).—*Dress.* Ibis, 1865, 481 (Texas).—*Coues,* Pr. Phila. Acad. xviii. 1866, 65 (Fort Whipple, Ariz.).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 282 (New York).—*Coues,* Pr. Bost. Soc. xii. 1868, 107 (South Carolina, resident).—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Laredo, Tex.).—*Coues,* Pr. Essex Inst. v. 1868, 267 (New England).—*Allen,* Mem. Bost. Soc. i. 1868, 523 (Indiana).—*Sumich.* Mem. Bost. Soc. i. 1869, 543 (Vera Cruz; Gulf coast up to plateau, breeding at Orizaba).—*Turnb.* B. E. Pa. 1869, 22; Phila. ed. 15.—*Stearns,* Am. Nat. iii. 1869, 282.—*Coop.* B. Cal. i. 1870, 21.—*Mayn.* Nat. Guide, 1870, 92 (Massachusetts).—*All.* Bull. MCZ. ii. 1871, 259 (Florida,

wintering).—*Coues*, Pr. Phila. Acad. xxiii. 1871, 19 (North Carolina).—*Parker*, Am. Nat. v. 1871, 168.—*Boardm.* Am. Nat. v. 1871, 121.—*Grayson*, Pr. Bost. Soc. xiv. 1872, 277 (Tres Marias Islands).—*Mayn.* B. Fla. 1872, 16.—*Coues*, Key, 1872, 74, f. 16.—*Allen*, Bull. MCZ. iii. 1872, 134 (Kansas).—*Purdie*, Am. Nat. vii. 1873, 693.—*Coues*, BNW. 1874, 8.—*Merr.* Am. Nat. viii. 1874, 7, 8, 86.—*Coop.* Am. Nat. viii. 1874, 17.—*B. B. & R.* NAB. i. 1874, 49, fig. pl. iii. f. 4.—*Hensh.* Rep. Orn. Specs. 1874, 97.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438 (New England).—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 151.

Orpheus polyglottus, *Sw.* Zool. Journ. iii. 1827, 167.—*Aud.* Syn. 1839, 87.—*Aud.* BA. ii. 1841, 187, pl. 138.—*Denny*, PZS. 1847, 38.—*Gerhardt*, Naum. iii. 1853, 37 (song).—*Wailes*, Rep. Mississippi, 1854, 319.—*Pratten*, Tr. Ill. Agric. Soc. 1855, 601 (Illinois).—*Henry*, Pr. Phila. Acad. vii. 1855, 310 (New Mexico).

Merinus polyglottus, *Baird*, Ives' Rep. Colorado, pt. vi. 1861, 5 (lapsu).

Orpheus leucopterus, *Vig.* Zool. Voy. Bloss. 1839, 18.

Mimus leucopterus, *Baird*, Stansbury's Rep. GSL. 1852, 328.

Orpheus polygothus, *Putn.* Pr. Essex Inst. i. 1856, 224 (lapsu).

Mimus canadatus, *Baird*, BNA. 1858, 345 (err. for "caudatus").

Mimus caudatus, *Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*Coop.* Am. Nat. iii. 1869, 186.—*Coop.* Pr. Cal. Acad. 1870, 75.

Mimus polyglottus *var.* **caudatus,** *Coues*, Ibis, 1865, 538 (Arizona).—*Ridg.* Bull. Essex Inst. v. 1873, 179 (Colorado).

Oreoscoptes montanus!, *Coues*, Ibis, 1865, 164 (lapsu).

Mimic Thrush, *Penn.* AZ. ii. 1785, 333, no. 194 and 194 B (young).

Mockingbird, *Vulg.*

Merle moqueur, *French.*

Spottvogel, *German.*

HAB.—United States, southerly, from Atlantic to Pacific. North regularly to the Middle States, sometimes to Massachusetts and Wisconsin. Northerly portions of Mexico. Cuba?

CH. SP. ♂ ♀ *Griseus, infrà sordidé albus; alis fuscis spatio albo, caudâ fusco alboque dimidiatâ, rostro pedibusque nigris.*

♂, adult: Upper parts ashy-gray, the lower parts soiled white. Wings blackish-brown, the primaries, with the exception of the first, marked with a large white space at the base, restricted on the outer quills usually to half or less of these feathers, but occupying nearly all of the inner quills. The shorter white spaces show as a conspicuous spot when the wing is closed, the longer inner ones being hidden by the secondaries. The coverts are also tipped and sometimes edged with white; and there may be much edging or tipping, or both, of the quills themselves. Outer tail-feathers white; next two pair white, except on the outer web; next pair usually white toward the end, and the rest sometimes tipped with white. Bill and feet black, the former often pale at the base below; soles dull yellowish. Length about 10 inches, but ranging from 9½ to 11; extent about 14 (13 to 15); wing, 4–4½; tail, 4½–5; bill, ⅞; tarsus, 1¼.

♀, adult: Similar to the male, but the colors less clear and pure; above rather brownish than grayish ash, below sometimes quite brownish-white, at least on the breast. Tail and wings with less white than as above described for the male. But the gradation in these features is by imperceptible degrees, so that there is no infallible color-mark of sex. In general, the clearer and purer are the colors, and the more white there is on the wings and tail, the more likely is the bird to be a male and prove a good singer. The female is also smaller than the male on an average, being generally under

and rarely over 10 inches in length, with extent of wings usually less than 14, the wing little if any over 4, the tail about 4½.

Young: Above decidedly brown, and below speckled with dusky.

There is comparatively little variation in this species except in size. A tendency is seen in specimens from the southwestern parts of the United States to elongation of the tail, this member averaging about 5 inches, and sometimes measuring rather more.

FIG. 6.—The Mockingbird.

IT is unnecessary to give an extended account of this famous bird, to which full justice has already been done in several treatises which the reader will instantly call to mind; and should he be desirous of looking up the subject, the citations given at the head of this article—representing a small portion of the literature devoted to the Mockingbird—may help him somewhat. The bird is common in suitable situations in the Colorado Basin, and especially so in the lower and warmer portions. Its general range is indicated in a foregoing paragraph. I have refrained from citing the various West India islands which are occupied by subspecies or varieties of the Mockingbird distinguished by some very modern authors. The North American representative is almost confined to this country, though it also occurs in portions of Mexico, as Colima, Mirador, Orizaba, and Mazatlan, as well as the Tres Marias Islands, and perhaps in Cuba. It winters in the Southern States in

great numbers—on the Atlantic side at least as far as South Carolina, where I have observed it at all seasons. In the spring, a small proportion of the whole number of individuals migrate "at will", commonly reaching the Middle States and corresponding latitudes further west. The northernmost records generally quoted fix the limit in Massachusetts; but Dr. Brewer speaks of a single individual seen near Calais, Me., by Mr. George A. Boardman. Another record from an extreme point, given by Dr. P. R. Hoy, is above quoted; the extension of the bird to Wisconsin, as there indicated, has been commonly overlooked. Other States in which the bird is known to have occurred are New York, Ohio, Indiana, Illinois, Missouri, Iowa, and Kansas. The parallel of 49° N. has been named as its usual or normal limit.

The Catbird

Mimus (Galeoscoptes) carolinensis

Muscicapa carolinensis, *L.* SN. i. 1766, 328, no. 18 (based on Briss. ii. 365 and Cates. i. 66).—*Bodd.* Tabl. PE. 1783, 42 (PE. 676).—*Gm.* SN. i. 1788, 946, no. 18 ("Camtschatcæ" &c.).—*Lath.* IO. ii. 1790, 483, no. 64.—*Turt.* SN. i. 1806, 581.

Turdus carolinensis, *Licht.* "Verz. 1823, 38"; "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1853, 57.—*D'Orb.* Ois Cuba, 1839, 51.—*Manger,* Zool. Gart. viii. 1867, 191 (in captivity).

Orpheus carolinensis, *Aud.* Syn. 1839, 88.—*Aud.* BA. ii. 1841, 195, pl. 140.—*Putn.* Pr. Ess. Inst. i. 1856, 209.—*Bland,* Smiths. Rep. for 1858, 1859, 287 (Bermudas).—*Martens,* J. f. O. 1859, 213 (Bermudas).—*Jones,* Nat. Bermuda, 1859, 27.

Mimus carolinensis, *Gray.*—*Scl.* PZS. 1856, 294 (Cordova).—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Bd.* BNA. 1858, 346.—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Gundl.* J. f. O. 1861, 324 (Cuba).—*Boardm.* Pr. Bost. Soc. ix. 1862, 126 (Maine).—*Blak.* Ibis, iv. 1862, 5 (Saskatchewan).—*Tayl.* Ibis, 1862, 128.—*Verr.* Proc. Essex Inst. iii. 1862, 148.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 163 (Missouri to Rocky Mountains).—*Blak.* Ibis, 1863, 66 (British America).—*Lord,* Pr. Roy. Arty. Inst. Woolwich, iv. 1864, 117 (east of Cascade Mountains).—*McIlwr.* Pr. Essex Inst. v. 1866, 87 (Canada West).—*Bryant,* Pr. Bost. Soc. 1867, 69 (Inagua).—*Coues,* Pr. Essex Inst. v. 1868, 267.—*Turnb.* B. E. Pa. 1869, 22; Phila. ed. 15.—*Coop.* Am. Nat. iii. 1869, 73, 295 (Cœur d'Aleñe Mountains).—*Coues,* Pr. Phila. Acad. xxiii. 1871, 19.—*Coues,* Key, 1872, 74.—*Mayn.* B. Fla. 1872, 19.—*Allen,* Bull. MCZ. iii. 1872, 174 (Kansas, Colorado, Utah).—*Trippe.* Pr. Bost. Soc. xv. 1873, 236 (Iowa).—*Pelz.* Ibis, 3d ser. iii. 1873, 25.—*Comstock,* Am. Nat. viii. 1874, 76.—*Packard,* Am. Nat. viii. 1874, 271.—*Allen,* Pr. Bost. Soc. 1874, 49 (Dakota).—*Coues,* BNW. 1874, 8.—*Trippe,* ibid. 228 (Colorado).

Mimius carolinensis, *Clifford,* Tr. Illinois Agric. Soc. v. 1865, 925 (habits).

Galeoscoptes carolinensis, *Cab.* MH. i. 1850, 82 (type).—*Gundl.* J. f. O. 1855, 470 (Cuba).—*S. & S.* Ibis, i. 1859, 7 (Guatemala).—*Scl.* PZS. 1859, 336 (critical), 362 (Xalapa).—*Gundl.* J. f. O. 1861, 406 (Cuba).—*Scl.* Cat. AB. 1862, 6.—*Allen,* Pr. Essex Inst. iv. 1864, 68.—*Bd.* Rev. AB. 1864, 54.—*Gundl.* Repert. 1865, 230 (Cuba).—*Bryant,* Pr. Bost. Soc. ix. 1865, 372.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 282.—*S. & S.* PZS. 1867, 278 (Mosquito Coast).—*Coues,* Pr. Bost. Soc. xii. 1868, 107.—*Sumich.* Mem. Bost. Soc. i. 1869, 544 (Vera Cruz).—*Lawr.* Ann. Lyc. N. Y. ix, 1869, 204 (Yucatan).—*Coop.* B. Cal. i. 1870, 23.—*S. & S.* PZS. 1870, 838 (Honduras).—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 464.—*Gundl.* J. f. O. 1872, 407 (Cuba).—*Scott,* Pr. Bost. Soc. xv. 1872, 220.—*Merr.* U. S. Geol. Surv.

Terr. for 1872, 1873, 670, 705, 713 (far west).—*Ridg.* Bull. Essex Inst. v. 1873, 179 (Colorado).—*Ridg.* Am. Nat. vii. 1873, 201, 550; viii. 1874, 198.—*Merr.* Am. Nat. viii. 1874, 7.—*B. B. & R.* NAB. i. 1874, 52, fig. pl. 3. f. 5.—*Hensh.* Rep. Orn. Specs. 1874, 40, 56, 71 (Utah, &c.).—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 152.

Calcoscoptes carolinensis, *S. & S.* PZS. 1859, 370 (Oaxaca).

Felivox carolinensis, *Bp.* CR. 1853.

Lucar carolinensis, *Coues* Pr. Phila. Acad. 1875, 349 (comment. on Bartram).

Lucar lividus, *Bartr.* Trav. Fla. Amer. ed. 1791, p. 290bis.

Turdus lividus, *Wils.* AO. ii. 1810, 90, pl. 14, f. 3 (after Bartram).—*Bp.* Journ. Phila. Acad. iv. 1824, 36 (critical).—*Less.* Tr. Orn. 1831, 410.—*Gaetke,* J. f. O. 1856, 71 (Heligoland!).—*Haym.* Pr. Phila. Acad. viii. 1856, 289.

Orpheus lividus, *Blas.* Ibis, iv. 1862, 66 (Heligoland).

Turdus felivox, *Vieill.* OAS. ii. 1807, 10, pl. 67.—*Bp.* Journ. Phila. Acad. iv. 1824, 36.—*Bp.* Ann. Lyc. N.Y. ii. 1826, 75.—*Peab.* Rep. Orn. Mass. 1839, 302.—*Thomps.* Vermont, 1853, 78, fig.—*Willis,* Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).

Orpheus felivox, *Sw. & Rich.* FBA. ii. 1831, 192.—*Pratten,* Tr. Illinois Agr. Soc. 1855, 601.

Mimus felivox, *Bp.* C. & GL. 1838, 18.—*Bp.* CA. i. 1850, 276.—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Read,* Pr. Phila. Acad. vi. 1853, 398.—*Hoy,* Pr. Phila. Acad. vi. 1853, 309 (Wisconsin).—*Kennic.* Tr. Ill. Agr. Soc. i. 1855, 582.—*Maxim.* J. f. O. vi. 1858, 180.—*Hoy,* Smiths. Rep. for 1864, 1865, 437 (Missouri).

Cat Flycatcher, *Penn.* AZ. ii. 1785, 388, no. 272.

Merle à derriere roux, *D'Orb.* l. c.

Zorzal gato, *Cuban.*

Merle Catbird; Chat, *Le Moine,* Ois. Canad. 1861, 167.

Catbird, *Vulg.*

FIG. 7.—Foot of Catbird, nat. size.

HAB.—Nearly all the United States, and adjoining British Provinces. North to the Red and Saskatchewan Rivers (latitude 54°). West to Washington, Oregon, Wyoming, and Utah. South in winter to Panama. Mexico. Cuba. Resident in the Southern States. Breeds throughout its range in North America.

CH. SP. ♂ ♀ *Schistaceo-plumbeus, subtus dilutior; vertice, caudâ, rostro pedibusque nigris, alis nigricantibus, crisso castaneo.*

♂ ♀: Slaty-gray, paler and more grayish-plumbeous below; crown of head, tail, bill and feet black. Quills of the wing blackish, edged with the body-color. Under tail-coverts rich dark chestnut or mahogany-color. Length, 8½–9; extent, 11 or more; wing, 3½–3¾; tail, 4; bill, ⅞; tarsus, 1–1 1/10.

Young: Of a more sooty color above, with little or no distinction of a black cap, and comparatively paler below, where the color has a soiled brownish cast. Crissum dull rufous.

The outer edge and tip of the lateral tail-feather is sometimes decidedly paler than the rest, indicating the space occupied by the white in *Oroscoptes.*

IT is not easy to account for the vulgar prejudice against this bird. The contempt he inspires cannot be entirely due to familiarity; for other members of the household, like the Robin, Bluebird, and Swallow, do not come under the ban. If his harsh, abrupt, and discordant note were the cause, the croaking

Crow and chattering Blackbird would share the same disgrace. Yet the fact remains that the Catbird is almost always regarded unfavorably, not so much for what he does, perhaps, as for what he is, or is not. To eyes polite, he seems to be "off color"; in the best society, he is looked upon as *un peu compromis*. There must be a reason for this—the world is too busy to invent reasons for things—for there never was a popular verdict without roots in some fact or principle. It is instinctive: the school-boy despises a Catbird just as naturally as he stones a frog; and when he thinks a thing is mean, no argument will convince him to the contrary.

For myself, I think the boys are right. Like many of the lower animals, they are quick to detect certain qualities, and apt to like or dislike unwittingly, yet with good reason. The matter with the Catbird is that he is thoroughly common-place. There is a dead level of bird-life, as there is of humanity; and mediocrity is simply despicable—hopeless and helpless, and never more so than when it indulges aspirations. Yet it wears well, and is a useful thing; there must be a standard of measure, and a foil is often extremely convenient. The Catbird has certainly a good deal to contend with. His name has a flippant sound, without agreeable suggestiveness. His voice is vehement without strength, unpleasant in its explosive quality. His dress is positively ridiculous—who could hope to rise in life wearing a pepper-and-salt jacket, a black velvet skull-cap, and a large red patch on the seat of his pantaloons? Add to all this the possession of some very plebeian tastes, like those which in another case render beer-gardens, circuses, and street-shows things possible, and you will readily perceive that a hero cannot be made out of a Catbird.

But to be common-place is merely to strike the balance of a great number of positive qualities, no single one of which is to be overlooked. It is accomplished by a sort of algebraic process, in which all the terms of an equation are brought together on one side, which then equals zero. There is said to be a great deal of human nature in mankind, and I am sure there is as much bird-nature in the feathered tribe. There is as much life in the kitchen as in the parlor: it is only a matter of a flight of stairs between them. We who happen to be above know none too much of what goes on below—much less, I suspect, than the *basse-cour* often learns of the *salon* and the *boudoir*. I sometimes fancy that the Catbird knows us

better than we do him. He is at least a civilized bird, if he does hang by the eyelids on good society; if he is denied the front door, the area is open to him; he may peep in at the basement window, and see the way up the back stairs. His eyes and ears are open; his wits are sharp; what he knows, he knows, and will tell if he chooses. His domesticity is large; he likes us well enough to stay with us, yet he keeps his eye on us. His is the prose of daily life, with all its petty concerns, as read by the lower classes; the poetry we are left to discover.

Explain him as we may, the Catbird is inseparable from home and homely things; he reflects, as he is reflected in, domestic life. The associations, it is true, are of an humble sort; but they are just as strong as those which link us with the trusty Robin, the social Swallow, the delicious Bluebird, or the elegant Oriole. Let it be the humble country-home of toil, or the luxurious mansion where wealth is lavished on the garden—in either case, the Catbird claims the rights of squatter sovereignty. He flirts saucily across the well-worn path that leads to the well, and sips the water that collects in the shallow depression upon the flag-stone. Down in the tangle of the moist dell, where stands the spring-house, with its cool, crisp atmosphere, redolent of buttery savor, where the trickling water is perpetual, he loiters at ease, and from the heart of the green-brier makes bold advances to the milkmaid who brings the brimming bowls. In the pasture beyond, he waits for the boy who comes whistling after the cows, and follows him home by the blackberry road that lies along the zigzag fence, challenging the carelessly thrown stone he has learned to dodge with ease. He joins the berrying parties fresh from school, soliciting a game of hide-and-seek, and laughs at the mishaps that never fail when children try the brier patch. Along the hedge row, he glides with short easy flights to gain the evergreen coppice that shades a corner of the lawn, where he pauses to watch the old gardener trimming the boxwood, or rolling the gravel walk, or making the flower bed, wondering why some people will take so much trouble when everything is nice enough already. Ever restless and inquisitive, he makes for the well-known arbor, to see what may be going on there. What he discovers is certainly none of his business: the rustic seat is occupied; the old, old play is in rehearsal; and at sight of the blushing cheeks that respond to passionate words, the very roses on the trellis hang their envious heads. This spectacle

tickles his fancy; always ripe for mischief, he startles the loving pair with his quick, shrill cry, like a burlesque of the kiss just heard, and enjoys their little consternation. "It is only a Catbird", they say reassuringly—but there are times when the slightest jar is a shock, and pledges that hang in a trembling balance may never be redeemed.

"Only a Catbird" meanwhile remembers business of his own, and is off. The practical question of dining recurs. He means to dine sumptuously, and so, like the French philosopher, place himself beyond the reach of fate. But nature, in the month of May, is full of combustible material, and the very atmosphere is quick to carry the torch that was kindled in the arbor where the lovers sat. His fate meets him in the only shape that could so far restrain masculine instincts as to postpone a dinner. The rest is soon told—rather it would be, could the secrets of the impenetrable dark-green mass of *Smilax* whither the pair betake themselves be revealed. The next we see of the bird, he is perched on the topmost spray of yonder pear tree, with quivering wings, brimful of song. He is inspired; for a time at least he is lifted above the common-place; his kinship with the prince of song, with the Mockingbird himself, is vindicated. He has discovered the source of the poetry of every-day life.

Genus HARPORHYNCHUS Cabanis

CHARS.—Bill of indeterminate size and shape, ranging from one extreme, in which it is straight and shorter than the head, to the other, in which it exceeds the head in length and is bent like a bow (see figs. of the several species, beyond). Feet large and strong, indicating terrestrial habits; the tarsus strongly scutellate anteriorly, about equaling or slightly exceeding in length the middle toe with its claw. Wings and tail rounded, the latter decidedly longer than the former. Rictus with well-developed bristles.

Viewing only the extremes of shape of the bill, as witnessed in *H. rufus* and such species as *H. redivivus* or *H. crissalis*, it would not seem consistent with the minute subdivisions which now obtain in ornithology to place all the species in one genus; and two eminent European ornithologists have already proposed to separate them. But the gradation of form is so gentle that it seems impossible to dismember the group without vio-

lence. The arcuation of the bill proceeds *pari passu* with its elongation; the shortest bills being the straightest, and conversely. There is also a curious correlation of color with shape of bill; the short-billed species being the most richly colored and heavily spotted, while the bow-billed ones are very plain, sometimes with no spots whatever on the under parts.

The genus is specially interesting in the present connection, since it reaches its highest development in the Colorado Basin, where nearly all the known species occur, some of them in abundance; while several of them are entirely confined, so far as we now know, to this region. As much can be said of no other genus. *Harporhynchus* is, in fact, the leading feature of the Colorado avifauna, whether we consider the relative number of species there represented, or the extremely local distribution of some of them. The fringilline genus *Pipilo* offers much the same case; and there is a further singular parallelism between the two. Both are represented, in the United States at large, by a single species, heavily and even richly colored in comparison with the pale dull shades of the numerous species or races of the Coloradan region: in both cases, there are species restricted to this Basin; in both, rounded wings shorter than the graduated tail, large strong feet, and terrestrial habits are conspicuous features in comparison with their respective allies. The parallel might even be pushed to the length of recognizing individual species of one genus as representatives of those of the other. *Pipilo aberti* is the counterpart of *H. crissalis*, and several others are almost as clearly analogous.

Brown Thrasher

Harporhynchus rufus

Turdus rufus, *L.* SN. i. 10th ed. 1758, 169, no. 6; 12th ed. 1766, 293, no. 9 (Cates. i. 28).—*Gm.* SN. i. 1788, 812, no. 9.—*Lath.* IO. i. 1790, 338, no. 44.—*Turt.* SN. i. 1806, 493.—*Vieill.* OAS. ii. 1807, 4, pl. 59.—*Wils.* AO. ii. 1810, 83, pl. 14.—*Bp.* Journ. Phila. Acad. iv. 1824, 33.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 75.—*Less.* Tr. Orn. 1831, 408.—*Peab.* Rep. Orn. Mass. 1839, 300.—*Aud.* OB. ii. 1834, 102; v. 1839, 441, pl. 116.—*Gerh.* Naum. iii. 1853, 37.—*Thomps.* Vermont, 1853, 78.—*Haym.* Pr. Phila. Acad. viii. 1856, 288.—*Gatke*, J. f. O. 1856, 71 (Heligoland).—*Gatke*, Naum. 1858, 424 (same).—*Gosse*, Alabama, 1859, 54, 295.

Orpheus rufus, *S. & R.* FBA. ii. 1831, 189—*Nutt.* Man. i. 1832, 328.—*Aud.* Syn. 1839, 88.—*Aud.* BA. iii. 1841, 9, pl. 141.—*Wailes*, Rep. Mississip. 1854, 319.—*Pratten*, Tr. Illinois Agric. Soc. 1855, 601.—*Putn.* Pr. Essex Inst. i. 1856, 209.—*Trippe*, Pr. Essex Inst. vi. 1871, 115 (Minnesota).

Orphea rufa, *Gould*, PZS. 1834, 15.

Mimus rufus, *Gray.*—*Bp.* C. & G L. 1838, 18.—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Woodh.* Rep. Expl. Zuñi, 1853, 73.—*Read,* Pr. Phila. Acad. vi. 1853, 398.—*Hoy,* Pr. Phila. Acad. vi. 1853, 309 (Wisconsin).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 582.—*Maxim.* J. f. O. vi. 1858, 180.—*Hoy,* Smiths. Rep. for 1864, 1865, 437.—*Turnb.* B. E. Pa. 1869, 22; Phila. ed. 15.

Toxostoma rufum, *Cab.* Arch. f. Nat. 1847, Bd. i. 207.—*Bp.* CA. i. 1850, 277.—*Blas.* Ibis, iv. 1862, 66 (Heligoland).

Toxostoma rufa, *Bruhin,* Zool. Gart. 1871, 15.

Harporhynchus rufus, *Cab.* MH. i. 1850, 82.—*Bd.* BNA. 1858, 353.—*Scl.* PZS. 1859, 340.—*Scl.* Cat. AB. 1861, 8.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 410.—*Hayd.* Tr. Am. Phil. Soc. xii. 1862, 163.—*Verr.* Proc. Essex Inst. iii. 1862, 148.—*Blak.* Ibis, iv. 1862, 5 (Saskatchewan).—*Tayl.* Ibis, iv. 1862, 128.—*Blak.* Ibis, v. 1863, 67 (Fort Carlton).—*Allen,* Pr. Essex Inst. iv. 1864, 68.—*Bd.* RAB. 1864, 44.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 282.—*McIlwr.* Pr. Essex Inst. v. 1866, 87 (Canada West).—*Coues,* Pr. Essex Inst. v. 1868, 267.—*Coues,* Pr. Bost. Soc. xii. 1868, 107.—*Coop.* Am. Nat. iii. 1869, 296 (Upper Missouri).—*Allen,* Am. Nat. iii. 1869, 508.—*Allen,* Am. Nat. vi. 1872, 266.—*Coues,* Key, 1872, 75.—*Allen,* Bull. MCZ. iii. 1872, 173.—*Mayn.* B. Fla. 1872, 21.—*Ridg.* Am. Nat. vii. 1873, 550.—*Coues,* Am. Nat. vii. 1873, 326, f. 65.—*Trippe,* Pr. Bost. Soc. xv. 1873, 236.—*Merriam,* Am. Nat. viii. 1874, 7.—*Ridg.* Am. Nat. viii. 1874, 198.—*Coues,* BNW. 1874, 9 (see p. 229).—*Allen,* Pr. Bost. Soc. xvii. 1874, 49 (Dakota).—*Hensh.* Rep. Orn. Specs. 1874, 57 (Colorado).—*B. B. & R.* NAB. i. 1874, 37, pl. 3, f. 1.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 154 (Rocky Mountains of Colorado).

FIG. 8.—Head of Prown Thrasher, nat. size.

Antimimus rufus, *Sundev.* Meth. Av. Disp. Tent. 1872, 13 (type).

Harporhynchus rufus *var.* **longicauda,** *Bd.* BNA. 1858, 353 (in text).—*Ridgw.* Bull. Essex Inst. v. 1873, 179 (Colorado).

Harporhynchus longicauda, *Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 464.

Ferruginous Thrush, *Penn.* AZ. ii. 1785, 333, no. 195.

Fox-coloured Mock-bird, *S. & R.* l. c.

Ferruginous Mocking-bird, *Aud.* l. c.

Grive rousse, *Le Moine,* Ois. Canad. 1861, 171.

Thrasher, Brown Thrush, Brown Thrasher, Sandy Mockingbird, French Mockingbird, *Vulg.*

[Some quotations of the subspecies H. LONGIROSTRIS I happen to have at hand are:—*Orpheus longirostris, Lafr.* RZ. 1838, 55; MZ. 1839, pl. 1.—*Toxostoma longirostre, Cab.* Arch. f. Naturg. 1847, Bd. i. 207.—*Toxostoma longirostris, Bp.* CA. i. 1850, 277.—*Mimus longirostris, Bd.* Rep. Expl. GSL. 1852, 328.—*Scl.* PZS. 1856, 294 (Cordova).—*Harporhynchus longirostris,*

Cab. MH. i. 1850, 81.—*Bd.* BNA. 1858, 352; ed. of 1860, 352, pl. 52.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 13, pl. 14.—*Scl.* PZS. 1859, 339 (critical); 1859, 362 (Xalapa); 1864, 172 (City of Mexico); Cat. AB. 1861, 8.—*Bd.* RAB. 1864, 44.—*Butch.* Pr. Phila. Acad. 1868, 149 (Laredo, Tex.).—*Harporhynchus rufus* var. *longirostris*, *Coues*, Key, 1872, 75.—*B. B. & R.* NAB. i. 1874, 39, pl. 3, f. 2.—HAB.—Valley of the Rio Grande and southward.]

HAB.—United States, and adjoining belt of British America; north to Canada, Lake Winnipeg and the Saskatchewan; west into the mountains of Colorado and Wyoming. Breeds throughout its range. Winters in the Southern States. No extralimital American quotations. Accidental in Europe (Heligoland, *Gatke*; see above).

CH. SP.—*a.* RUFUS. ♂ ♀ *Suprà ferrugineus, alis albo-bifasciatis; infrà ex rufo albidus; pectore lateribusque maculis brunneis guttato-lineatis; gonyde recto; mandibulâ ad basin flavescente.*

♂ ♀: Upper parts uniform rich rust-red, with a bronzy lustre. Concealed portions of quills fuscous. Greater and median wing-coverts blackish near the end, then conspicuously tipped with white. Bastard quills like the coverts. Tail like the back, the lateral feathers with paler ends. Under parts white, more or less strongly tinged, especially on the breast, flanks, and crissum, with tawny or pale cinnamon-brown, the breast and sides marked with a profusion of well-defined spots of dark brown, oval in front, becoming more linear posteriorly. Throat is immaculate, bordered with a necklace of spots; the middle of the belly and under tail-coverts likewise unspotted. Bill black, with yellow base of the lower mandible; feet pale; iris yellow. Length, about 11 inches; extent, 12½ to 14; wing, 3¾–4¼; tail, 5 or more; bill, 1; tarsus, 1.25.

b. LONGIROSTRIS.—*Præcedenti similis; suprà rufo-brunneus, alis albo-bifasciatis; infra albus, pectore lateribusque maculis nigricantibus guttato-lineatis; gonyde incurvato.*

Similar in general to *H. rufus;* upper parts reddish-brown, instead of rich foxy-red; under parts white, with little if any tawny tinge, the spots large, very numerous, and blackish instead of brown. The wing shows dusky and white bars across the ends of the median and greater coverts, as in *rufus*, but the ends of the rectrices are scarcely or not lighter than the rest of these feathers. The bill is almost entirely dark-colored.

Besides these points of coloration, which are readily appreciable, there is a decided difference in the shape of the bill. In *H. rufus*, the bill is quite straight, and only just about an inch long; the gonys is straight, and makes an angle with the slightly concave lower outline of the mandibular rami. In *H. longirostris*, the bill is rather over an inch long, and somewhat curved; the outline of the gonys is a little concave, making with the ramus one continuous curve from base to tip of the bill.

AS in the case of the Mockingbird, I shall have but a word to say respecting the Brown Thrush or Thrasher, whose biography has already been several times written, before tak-

ing up the other species of the genus, which are far better represented in the Colorado Basin. It is scarcely, in fact, an inhabitant of this region at all, only reaching, as far as we now know, the extreme northeastern portion, where it has been found, by Mr. J. A. Allen, in the mountains of Colorado Territory, up to an altitude of 7,500 feet. The foregoing paragraph indicates its general range, in every part of which it appears to nestle with equal readiness, while it passes the winter in the southerly portions. Very singularly, the only extralimital records I possess of this species refer to its occurrence, not near our boundaries, as would be expected, but in Europe. It has been found in Heligoland, that wonderful little island in the North Sea, where the ornithology of the four quarters of the world seems to come to a focus. To epitomize some other points in its history, I may say that it is a delightful songster, like all its tribe; inhabits brushwood and shrubbery, spending much of its time on the ground, scratching for food with all the persistency of a Towhee; feeds on insects and berries; nests, according to locality, from March to June, in brushes, vines, or brier-patches; builds a bulky structure of twigs, weed-stalks, withered leaves, bark-strips, and fibrous roots, and lays from four to six eggs, about an inch long by four-fifths broad, white or greenish-white, marked with innumerable reddish-brown dots, usually more numerous at or around the larger end.

Curve-billed Thrasher

Harporhynchus curvirostris palmeri

a. curvirostris.

Orpheus curvirostris, *Sw.* Philos. Mag. iii. 1827, 369 (Eastern Mexico).—*McCall,* Pr. Phila. Acad. iv. 1848, 63 (Matamoras).

Mimus curvirostris, *Gray,* G. of B.

Toxostoma curvirostris, *Bp.* CA. i. 1850, 277.—*Lawr.* Ann. Lyc. N. Y. vi. 1852, 223 (Texas).—*Bd.* Stansbury's Rep. GSL. 1852, 329.

Toxostoma curvirostre, *Scl.* PZS. 1857, 212 (Orizaba).

Harporhynchus curvirostris, *Cab.* MH. i. 1850, 81.—*Bd.* BNA. 1858, 351; ed. of 1860, 351, pl. 51.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii, 1859, Birds, 12, pl. 13.—*Scl.* PZS. 1859, 339 (critical); 1859, 370 (Oaxaca).—*Bd.* RAB. i. 1864, 45.—*Dress.* Ibis, 2d ser. i. 1865, 482 (Texas).—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Laredo, Tex.).—*Coues,* Am. Nat. vii. 1873, 328 (critical).—*B. B. & R.* NAB. i. 1874, 41, pl. 3, f. 3 ("adjacent regions of United States and Mexico, southward", &c.).

Pomatorhinus turdinus, *Temm.* PC. 411.

Toxostoma vetula, *Wagl.* Isis, 1831, 528.

[NOTE.—Some of the foregoing United States references actually or virtually include *palmeri.*]

b. palmeri.

Harporhynchus curvirostris, *Heerm.* PRRR. x. 1859, Parke's Route, 11 (Arizona.—Heermann's specimen, No. 8128, Mus. Smiths., afterward became a type of var. *palmeri*).—*Coues*, Pr. Phila. Acad. 1868, 83 (Arizona).—*Coues*, Key, 1872, 75.

Harporhynchus curvirostris *var.* **palmeri,** *Ridgw.* MSS.—*Coues*, Key, 1872, 351.—*Coues*, Am. Nat. vii. 1873, 329, fig. 68.—*Brewer*, Pr. Bost. Soc. xvi. 1873, 108 (eggs).—*B. B. & R.* NAB. i. 1874, 43 (Tucson, Ariz.).—*Hensh.* List B. Ariz. 1875, 154.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 156 (Arizona).

HAB.—Of the typical form, from the valley of the Rio Grande along the border of the United States, to Mazatlan, and southward in Mexico. Var. *palmeri* has only been found in Arizona.

CH. SP. *a.* CURVIROSTRIS.—*Fusco-cinereus, alis caudâque fuscis; infrà albidus, maculis rotundatis fusco-cinereis nebuloso-notatus, hypochondriis crissoque ochraceo-tinctis, alis albo bifasciatis, caudâ albo-terminatâ.*

♂ ♀: Above, uniform brownish-gray (exactly the color of a Mockingbird, *M. polyglottus*), the wings and tail darker and purer brown. Below, dull whitish, tinged with ochraceous, especially on the flanks and crissum, and marked with rounded spots of the color of the back, most numerous and blended on the breast. Throat quite white, immaculate, without maxillary stripes; lower belly and crissum mostly free from spots. No decided markings on the side of the head. Ends of greater and median wing-coverts white, forming two decided cross-bars; tail-feathers distinctly tipped with white. Bill black; feet dark-brown. Length of ♂, about 11 inches; wing, 4½–4¾; tail, 4½–5; bill, 1⅛; tarsus, 1¼; middle toe and claw, 1⅛. ♀ averaging rather smaller.

FIG. 9.—Head of Curve-billed Thrasher (var.); nat. size.

b. PALMERI.—*Similis; fasciis alarum et apicibus rectricum albis obsoletis; infrà griseo-albidus, rufo-tinctus, maculis fusco-cinereis obsoletis; rostro graciliore.*

Although the differences between this and the typical form are not very easy to express, yet they are readily appreciable on comparison of specimens, and fully warrant Mr. Ridgway's discrimination of a var. *palmeri*. The upper parts are quite similar; but the under parts, instead of being whitish, with decided spotting of the color of the back, are grayish, tinged with rusty, especially behind, and the spotting is nebulous. The white on the ends of wing-coverts and tail-feathers is reduced to a minimum or entirely suppressed. The bill is slenderer and apparently more curved in all the specimens I

have seen. (In the figure, the bill is rather too stout). Average dimensions of four specimens of both sexes: length, 10.75; wing, 4.33; tail, 5.00; chord of culmen, 1.12; tarsus, 1.25; middle toe and claw rather more.

This form was first indicated, in 1858, by Professor Baird, who noted the peculiarities of a specimen (No. 8128 of the National Museum) collected near Tucson, Ariz., by Dr. A. L. Heermann, whose notice is above quoted. This same specimen afterward became a type of Mr. Ridgway's var. *palmeri*, as first published by me, from his MS., in the "Key", p. 351 (1872).

THE habitat of the true Curve-billed Thrush is stated to extend to the southern border of the United States. This would bring it within the area the birds of which are treated in the present volume; but it will be understood that the remarks which follow relate to the northern variety, which, so far as we know, is peculiar to Arizona. It was discovered near Tucson by Dr. Heermann, who has left a short note of his observations, and its peculiarities were first noted by Professor Baird, although it was not named or formally described as distinct until 1872. In 1873, I gave a short account of the bird in the "American Naturalist", as above quoted, accompanied by a figure of the head (here reproduced, as are the others illustrating the species of this genus), drawn from specimens sent to me while I was in Dakota by Lieut. C. Bendire, United States Army. This gentleman's memoranda accompanying the specimens indicated that the habits of the bird are much the same as those of other Thrashers; and that it nests in cactus, mezquite, and other low bushes, laying usually three eggs. Two sets of eggs which he obtained were taken, one July 18, the other August 20. They measure about 1.10 inches in length by 0.80 in breadth, and are pale dull greenish-blue, speckled evenly and profusely with reddish-brown dots.

Later observations, made by Mr. H. W. Henshaw in Arizona, afford further insight into the life of this bird. He found it common in the dreary desert region about Camp Lowell, where it was associated with *H. bendirii* and *H. crissalis*, and easily distinguished it during life by certain peculiarities of flight. It frequented the edges of the mezquite thickets, hopping lightly over the ground in search of insects. It flew rapidly, keeping generally close to the ground, retreating when alarmed from one thicket to another, and hiding in the dense brush. Sometimes, when startled, it mounted to the tops of the mezquites with quick nervous movements and continual jetting of the long tail, emitting meanwhile a succession of loud cluck-

ing notes to indicate its anger or alarm. In its general disposition, it appeared wild and suspicious. Hundreds of the nests were observed in the "cholla" cactuses; but at the time (September 1 to 10) they were empty, and only one bird in nesting-plumage was found. "Near a water-hole, some thirty miles from Camp Lowell, where is found a meagre supply of the precious fluid, which, from long standing, becomes so stagnant and thick with mud that the thirsty animals which pass through, though suffering terribly from the effects of many miles' weary travel over the burning sands, often reject it, considerable numbers of these Thrushes were noticed in the throngs of the commoner kinds, as Sparrows and White-winged Blackbirds, which resort here through the day to slake their thirst. The brink of the pool was often crowded with hundreds of birds brought thus together from common necessity, and forgetful of aught else save the urgent need which impelled them to seek that spot from great distances."

Arizona Thrasher

Harporhynchus bendirii

Harporhynchus bendirei, *Coues*, Am. Nat. vii. 1873, 330, f. 69.—*David Scott*, Am. Nat. vii. 1873, 565 (disallows the species, upon presumptive applicability of Darwinism).—*B. B. & R.* NAB. iii. 1874, 500.

Harporhynchus bendiri, *Brew.* Pr. Bost. Soc. xvi. 1873, 108 (eggs redescribed).

Harporhynchus cinereus *var.* **bendirei,** *Hensh.* List B. Ariz. 1875, 154.

Harporhynchus cinereus *var.* **bendieri,** *Hensh.* Zool. Expl. W. 100 Merid. 1876, 154 (critical).

Bendire's Thrush, *Coues*, l. c.

HAB.—Arizona.

CH. SP.—♂ ♀ *Rostro capite breviore, ad basin robusto, ad apicem acuminato, gonyde subrecto; tarso digito medio cum ungue longiore. Fusco-cinereus, subtus fusco-albidus, pectore maculis fuscis acutis, lateribus crissoque rufescentibus; strigis maxillaribus nullis.*

♂ ♀: Bill shorter than head, comparatively stout at base, very acute at tip, the culmen quite convex, the gonys however only just appreciably concave. Tarsus a little longer than the middle toe and claw. Third and fourth primaries about equal and longest, fifth and sixth successively slightly shorter, second equal to seventh, first equal to penultimate secondary in the closed wing. Entire upper parts, including upper surfaces of wings and tail, uniform dull pale grayish-brown, with narrow, faintly rusty edgings of the wing-coverts and inner quills, and equally obscure whitish tipping of the tail-feathers. No maxillary nor auricular streaks; no markings about the head except slight speckling on the cheeks. Under parts brownish-

white, palest (nearly white) on the belly and throat, more decidedly rusty-brownish on the sides, flanks, and crissum, the breast alone marked with numerous small arrow-head spots of the color of the back. Bill light colored at base below. ♂: Length, about 9¼; wing, 4; tail, 4¼; bill (chord of culmen), ⅞; along gape, 1⅛; tarsus, 1¼; middle toe and claw, 1⅛. ♀ rather smaller; wing, 3⅞, &c.

This species is allied to, and in some respects intermediate between, *H. curvirostris palmeri* and *H. cinereus;* its closest relationships being decidedly with the latter, though the appearance of the under parts is altogether different. It is distinguished from *palmeri* in being much smaller, with a much

FIG. 10.—Head of Arizona Thrasher, nat. size.

shorter and differently shaped bill, different proportions of tarsus and toes, and obviously different coloration (compare measurements and description). It comes much nearer *H. cinereus*, in spite of some decided differences both of form and color. In the latter, the bill, though of nearly the same length, is more curved; the tarsus is not longer than the middle toe and claw; the third-sixth quills of the wing are about equal and longest, the second being about equal to the eighth; while the under parts are as distinctly and heavily spotted as those of *H. rufus* itself. The two are of about the same size, and in the coloration of the upper parts are much alike. While fully recognizing the close relationships of *H. bendirii* to *H. cinereus*—in fact, having insisted upon them from the outset, when it was assumed that the bird was nearer *palmeri*—I am not prepared to assent to Mr. Henshaw's reduction of the species to a variety of *cinereus*. I recognize the conscientious care with which he has made his comparisons, and regret that I cannot agree with conclusions so drawn, unlike those of Mr. D. Scott, which rest upon hasty speculation.

The synonymy and characters of *H. cinereus*,* with a figure of the head, are given in the subjoined note, to facilitate comparison.

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* HARPORHYNCHUS CINEREUS.—*Saint Lucas Thrasher.*

Harporhynchus cinereus, *Xant.* Pr. Phila. Acad. xi. 1859, 298 (Cape Saint Lucas).—*Baird,* Pr. Phila. Acad. xi. 1859, 303 (the same).—*Scl.* Cat. AB. 1861, 8.—*Bd.* RAB. 1864, 46.—*Elliot,* BNA. pl. 1.—*Coop.* B. Cal. i. 1870, 19.—*Coues,* Key, 1872, 75.—*Coues,* Am. Nat. vii. 1873, 327, 331, f. 70.—*B. B. & R.* NAB. i. 1874, 40, pl. 4, f. 2.

HAB.—Lower California.

CH. SP.—♂ ♀ *Fusco-cinereus, infra albus, maculis parvis, distinctis, fuscis; alis caudâque fuscis, illis albo-bifasciatis, hac albo-terminatâ.*

♂ ♀: Upper parts uniform ashy-brown, the wings and tail similar but

THE history of this bird is short, if not also in keeping with the rest of the familiar quotation. That it should have been overlooked by all the earlier explorers in Arizona is probably a result of its extremely local distribution; in fact, it is only known to inhabit a very restricted area in Southern Arizona, in the vicinity of Tucson. It was discovered in 1872 by the zealous collector whose name it bears in recognition of the services he has rendered in developing the ornithology of the Southwest. In the spring of 1873, while at Fort Randall, Dakota, I received specimens from Lieutenant Ben-

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rather purer and darker brown, the former crossed with two white bars formed by the tips of the coverts, the latter tipped with white. Below, dull white, often tinged with rusty, especially behind, and thickly marked with small, sharp, triangular spots of dark brown or blackish. These spots are all perfectly distinct, and cover the lower parts excepting the throat, lower belly, and crissum. Becoming smaller anteriorly, they run up each side of the throat in a maxillary series bounding the immaculate area. The sides of the head are finely speckled, and the auriculars streaked. The bill is black, lightening at the base below, and little if any longer than that of *H. rufus*, though decidedly curved. Length of ♂ about 10 inches; wing, 4; tail, 4½; bill, 1⅛; tarsus, 1¼; middle toe and claw, 1¼. ♀ averaging rather smaller.

FIG. 11.—Head of Saint Lucas Thrasher, nat. size.

Young: In a newly-fledged specimen, the upper parts are strongly tinged with rusty-brown, and this color also edges the wings and tips the tail.

The striking resemblance of this species to the Mountain Mockingbird, (*Oroscoptes montanus*) has been noted. The species is immediately distinguished from any others of the United States by the sharpness of the spotting underneath, which equals that of *H. rufus* itself, the small and strictly triangular character of the spots, together with the grayish-brown of the upper parts, and inferior dimensions. The bill is shaped much as in *curvirostris* and *palmeri*. *H. ocellatus* of Mexico is even more boldly marked below, but the spots are large, rounded, and black.

dire, who had already perceived that the bird differed in its habits as well as in its physical characters from either of the two species (*crissalis* and *palmeri*) with which he found it associated. These were soon afterward described in the "American Naturalist", and the head figured to show the peculiar shape of the bill.

The Arizona Thrasher appears to be less numerous than either of its associates. The only additional specimens which have come to hand since the types were received are three taken at Camp Lowell by Mr. Henshaw. The bird is said to differ notably in its nesting habits from the Curve-billed Thrasher; the latter building almost always in cactuses, while Bendire's nests in trees and bushes, preferably mezquite, sometimes thirty feet from the ground. A nest containing two fresh eggs was found July 19, 1872. The eggs are readily distinguishable from those of *H. palmeri*. They are simply grayish-white, instead of light dull green, marked with numerous spots and larger blotches or dashes of two shades of reddish-brown, with other markings of lilac or lavender. The markings tend to aggregate about the larger end, instead of being evenly distributed over the whole surface. There is comparatively little inequality in the contour of the two ends; the size is about 1.00 by 0.73. A specimen measured by me was only 0.96 by 0.70; others, according to Dr. Brewer, were 1.10 by 0.75.

According to the observations recorded by its discoverer, and also by Mr. Henshaw, the general habits of the species are not peculiar in comparison with those of its congeners.

Yuma Thrasher

Harporhynchus redivivus lecontii

Toxostoma lecontei, *Lawr.* Ann. Lyc. N. Y. v. 1852, 121 (Fort Yuma).—*Bd.* Stansbury's Rep. GSL. 1852, 329.

Harporhynchus lecontei, *Bp.* "CR. xxviii. 1854, 57; Not. Delattre, 39."—*Bd.* BNA. 1858, 350; ed. of 1860, 350, pl. 50; U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 12, pl. 12.—*Bd.* RAB. 1864, 47.—*Coues,* Pr. Phila. Acad. 1866, 65 (near Fort Mojave, Ariz.).—*Coop.* Am. Nat. iii. 1869, 188, 473.—*Coop.* B. Cal. i. 1870, 17.

Harporhynchus lecontii, *Scl.* PZS. 1859, 339 (critical).—*Coues,* Ibis, 2d ser. ii. 1866, 259.

Harporhynchus redivivus *var.* **lecontii,** *Coues,* Key, 1872, 75.

Harporhynchus redivivus *var.* **lecontei,** *Coues,* Am. Nat. vii. 1873, 328.—*B. B. & R.* NAB. i. 1874, 44, pl. 4, f. 3.—*Hensh.* List B. Ariz. 1875, 154.

Le Conte's Thrasher, *ll. cc.*

HAB.—Immediate valley of the Colorado and Gila Rivers.

b. LECONTII.—*Cinereus, alis caudâque concoloribus; infrà dilutior, gula albidâ, strigis maxillaribus fuscis, ventre crissoque sensim ochraceis.*

This form, with the size and proportions substantially the same as those of *redivivus* proper, differs very notably in the pallor of all the coloration, being in fact a bleached desert race. Excepting the slight maxillary streaks, there are no decided markings anywhere; and the change from the pale ash of the general under parts to the brownish-yellow of the lower belly and crissum is very gradual.

The characters of the typical form are subjoined for comparison.*

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* HARPORHYNCHUS REDIVIVUS.—*California Thrasher.*

Harpes rediviva, *Gamb.* Pr. Phila. Acad. ii. 1845, 264; iii. 1846, 112 (California).

Toxostoma rediviva, *Gamb.* Journ. Phila. Acad. 2d ser. i. 1847, 42.—*Bd.* Stansbury's Rep. GSL. 1852, 328.—*Heerm.* Journ. Phila. Acad. ii. 1853, 264.—*Cass.* Ill. 1855, 260, pl. 42.—*?? Henry,* Pr. Phila. Acad. vii. 1855 308 ("New Mexico").

Toxostoma redivivum, *Bp.* CA. i. 1850, 277.—*Scl.* PZS. 1857, 126 (California).

Harporhynchus redivivus, *Cab.* Arch. f. Naturg. 1848, Bd. i. 98.—*Bd.* BNA. 1858, 349.—*Scl.* PZS. 1859, 339 (critical).—*Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*Bd.* RAB. 1864, 48.—*Coop.* Am. Nat. iii. 1869, 188; iv. 1871, 757; viii. 1874, 17.—*Coop.* B. Cal. i. 1870, 15.—*Coues,* Key, 1872, 75.—*Coues,* Am. Nat. vii. 1873, 327, f. 66.—*B. B. & R.* NAB. i. 1874, 45, pl. 4, f. 4.

HAB.—Coast region of California.

FIG. 12.—Head of California Thrasher; nat. size.

CH. SP.—♂ ♀ *Immaculatus, alis caudâque innotatis, rostro arcuato. Olivaceo-fuscus, subtus dilutior, ventre crissoque rufescentibus, gulâ albâ, lateribus capitis fuscis, albo-striatis, rostro nigro.*

♂: No spots anywhere; the wings and tail without decided barring or tipping. Bill as long as the head or longer, bow-shaped, black. Wings very much shorter than the tail. Above, dark oily olive-brown, the wings and tail similar, but rather purer brown. Below, a paler shade of the color of the upper parts, with the belly and crissum strongly rusty-brown, the throat definitely whitish in marked contrast, and not bordered by decided maxillary streaks. Cheeks and auriculars blackish-brown, with sharp whitish shaft streaks. Length of ♂, 11½; wing, 4 or rather less; tail, 5 or more; bill (chord of culmen), nearly or quite 1.50; tarsus as long as the bill; middle toe and claw about the same. ♀ similar, rather smaller.

LE CONTE'S Thrasher still bears off the palm for rarity, even in competition with the newly-found *H. bendirii*. Though it has been known for about a quarter of a century, only three or four specimens have come to hand. The original was taken at Fort Yuma, at the junction of the Gila with the Colorado. Dr. J. G. Cooper states that he secured two near Fort Mojave, along the route in the Colorado Valley to the San Bernardino Mountains, where, however, he found them "rather common" in thickets of low bushes. He discovered an empty nest built in a yucca, like that of *H. redivivus*. In September, 1865, I had the pleasure of meeting with the bird myself, about fifteen miles east of the Colorado River, at a point a little above Fort Mojave, and I managed, not without difficulty, to secure a single individual. It was in excellent plumage, and, having been killed with a touch of fine shot and preserved with special care, made a very fine specimen. We had come through the "Union Pass" of a low range of mountains, or high line of bluffs, which flank the eastern bank of the river, and were preparing to make a "dry camp" in a sterile, cactus-ridden plain, which stretches across toward the broken ground where Beale's Springs are situated, when, in the dusk of the evening, this singular whitish-looking bird caught my eye. Though I was not at the moment in an enthusiastic frame of mind respecting ornithology, the sight was enough to arouse what little energy a hard day's march had not knocked out of me, and I started on what came near being a wild-goose chase after the coveted prize. It is bad enough to play the jack-rabbit among Arizona cactuses in broad daylight, and to be obliged to skip about in the uncertain glimmering of evening is discouraging in the extreme. My bird had the best of it for awhile, and seemed to enjoy the sport, as it fluttered from one cactus bush to another, with the desultory yet rapid flight that is so confusing, and makes one hesitate to risk a poor shot, in momentary expectation of getting a better chance. At length, it dived into the recesses of a large yucca, where it stood motionless just one instant too long. I did not see it fall, and feared I had missed, till, on gaining the spot, I found the body of the once sprightly and vivacious bird hanging limp in a crevice of the thick fronds. As I smoothed its disordered plumage, and strolled back to camp, I felt the old-time glow which those who are in the secret know was not entirely due to the exercise I had taken.

Crissal Thrasher

Harporhynchus crissalis

Toxostoma crissalis, *Henry*, Pr. Phila Acad. x. 1858, 117 ("New Mexico").

Harporhynchus crissalis, *Bd.* BNA. 1858, 350; atlas, 1860, pl. 82.—*Henry*, Pr. Phila. Acad. xi. 1859, 107.—*Scl.* PZS. 1859, 339 (critical).—*Bd.* RAB. 1864, 47.—*Coues*, Pr. Phila. Acad. xviii. 1866, 65 (Arizona).—*Coop.* Am. Nat. iii. 1869, 473.—*Coop.* B. Cal. i. 1870, 18, fig.—*Coues*, Key, 1872, 75.—*Coues*, Am. Nat. vi. 1872, 370 (nest and eggs); vii. 1873, 328, f. 67.—*Brew.* Pr. Bost. Soc. xvi. 1873, 108 (egg).—*B. B. & R.* NAB. i. 1874, 47, pl. 4, f. 1.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 6.—*Hensh.* Rep. Orn. Specs. 1874, 40 (Saint George, Utah), 97 (Arizona).—*Hensh.* List B. Ariz. 1875, 154.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 158.

Harporrynchus crissales, *Bd.* Ives' Rep. Colo. R. pt. v. 1861, 6.

Red-vented Thrasher, *B. B. & R.* l. c.

Hab.—Arizona, New Mexico, Southern Utah, and California in the Colorado Valley.

Ch. sp.—♂ *Immaculatus, alis caudâque innotatis, rostro arcuato, gracillimo, nigro. Fusco-cinereus, infrà dilutior, gulâ albâ strigis maxillaribus nigris, crisso castaneo.*

♂ Brownish-ash, with a faint olive shade, the wings and tail purer and darker fuscous, without white edging or tipping. Below, a paler shade of the color of the upper parts. Throat and side of the lower jaw white, with sharp black maxillary streaks. Cheeks and auriculars speckled with whitish. Under tail-coverts deep rich chestnut, in marked contrast with the surrounding parts. Bill black, slenderer for its length than

Fig. 13.—Head of Crissal Thrasher; nat. size.

that of any other species, as long as that of *redivivus*, arcuate. Length, about 12 inches; wing, 4 or rather less; tail, about 6 (more or less, thus absolutely longer than in any other species), its lateral feathers 1¼ shorter than the central ones; bill, 1⅛; tarsus, 1⅛; middle toe and claw, 1¼.

Belonging to the group of unspotted Thrashers, with very long arcuate bills, this fine species is immediately distinguished by the abruptly chestnut under tail-coverts, the contrast being fully as great as that seen in the Catbird, *Mimus carolinensis*—in fact, the bird looks not very unlike a gigantic faded-out Catbird. The sharp black maxillary streaks are also a strong character. The bill is extremely slender, the tail at a maximum of length, and the feet are notably smaller than those of *H. redivivus*.

IT only remains to give some account of the Crissal Thrasher to finish our notice of the interesting genus *Harporhynchus*. I have never seen the bird alive; but, to judge from the meagre published records respecting it, its general habits are in no wise peculiar, and may be passed over without further comment. The species was not discovered until about 1858, when a specimen obtained by himself near Mimbres was described by Dr. T. C. Henry, of the Army—a zealous naturalist, whose untimely recall from this world's duties cut short a career which opened in full promise of usefulness and honor. Shortly afterward, in 1863, a second specimen was procured by Mr. H. B. Möllhausen, while associated with Dr. C. B. R. Kennerly on the natural history work of one of the Pacific Railroad surveys, under command of Lieutenant Whipple; this was taken at Fort Yuma. Quite recently, a specimen was taken by a different person at Saint George, in Southern Utah, June 8, 1870. These three extreme points give us the angles of a triangle by which the distribution of the species, as far as present knowledge goes, may be plotted. It will be observed that the range is a little more extended than that of LeConte's, Bendire's, or Palmer's Thrasher, with all three of which the Crissal Thrasher is associated in portions of Arizona; and we are led to infer that when the "topography" of the other three species is fully determined, it will be found no less extensive. For there is nothing peculiar in the economy or requirements of any one of the four in comparison with the rest.

Though the nidification of the Crissal Thrasher is substantially the same as that of its associates just mentioned, its egg is entirely different, and unique in the genus, as far as known, in being whole-colored. It measures an inch and an eighth or a seventh in length by a little over four-fifths of an inch in breadth, and is of a rich emerald-green color, with a shade of blue, entirely free from markings—at least, such is the case in all the specimens which have been examined by naturalists. The nest and eggs appear to have been first collected by the person who found the bird at Saint George; though the earliest published account of them was a short note which I communicated to the "American Naturalist" in 1872, giving the results of Lieutenant Bendire's observations respecting the species, made at Tucson. According to Dr. Brewer, the Saint George nest was an oblong flat structure, with very slight depression, consisting of coarse sticks loosely put together, with

an inner finishing of similar but finer material; the outer portion was a foot long by seven inches broad; the inner nest was circular, with a diameter of four and a half inches. The site of this nest is not mentioned.

During the latter part of March, 1872, Lieutenant Bendire took no less than six nests in Southern Arizona. "The nest," he writes, "is externally composed of dry sticks, some of which are fully a quarter of an inch thick; the lining consists exclusively of dry rotten fibres of a species of wild hemp, or *Asclepias*; in none of the nests did I find any roots, leaves or hair. The inner diameter of the nest is about three inches, with a depth of about two inches. None of the nests were more than three feet from the ground. In two cases I found nests in a dense bushy thicket of wild currant, twice again on willow bushes, and in another instance in an ironwood bush. The usual number of eggs, strange as it may appear, is only two; they are of an emerald green color, unspotted. The first set I found, March 22d, contained small embryos; the third, next day, was a single egg with a very large embryo; it was broken, and must have been laid as early as March 10th. From the number of nests taken it would appear that the bird is common, but such is by no means the case—I believe I have found every nest of it on the Rillito. The Red-vented Thrush is very shy, restless and quick in its movements, and hard to observe. It appears to prefer damp shady localities near water-courses, and confines itself principally to spots where the wild currant is abundant. At present, March 27th, it appears to feed principally on insects. Its flight is short—only long enough to enable the bird to reach the next clump of bushes. It seems to have more frequent recourse to running than to flying, and dives through the densest undergrowth with great ease and rapidity."

CHAPTER II.—BLUEBIRDS

FAM. SAXICOLIDÆ

RECOGNITION of the family *Saxicolidæ* is purely a conventional matter, in which most ornithologists tacitly agree to follow each other upon no better ground than that of precedent. The characters of the only genus with which we have here to do will be found beyond under head of *Sialia*, no definition of the whole group being attempted—none being, perhaps, practicable. The limitation of the group fluctuates with different authors, especially on the side next to *Turdidæ*. As usually constituted, it contains about a dozen genera and upward of a hundred species, which agree in possessing 10 primaries, of which the first is very short or spurious, and booted tarsi. It is essentially an Old World group, represented in the western hemisphere only by the characteristic American genus *Sialia*, with three species, and by a single species of the typical genus *Saxicola*, some of the details of the external form of which are illustrated in fig. 14. This species, the well-known Stone Chat or Wheatear of Europe, *S. œnanthe*, occurs sparingly in Greenland, along the North Atlantic coast of America, and also in Alaska; it is generally considered as simply a straggler from the Old World, but it is apparently not rare in Labrador, in which country there is reason to believe it breeds.

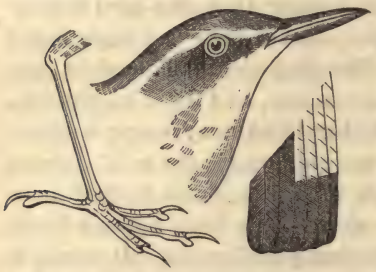

FIG. 14.—Details of structure of *Saxicola*.

Genus SIALIA Swainson

CHARS.—Primaries 10, the 1st spurious and very short. Wings pointed, the tip formed by the 2d, 3d, and 4th quills. Tail much shorter than the wings, emarginate. Bill about half as long as the head or less, straight, stout, wider than deep at

the base, compressed beyond the nostrils, notched near the tip, the culmen at first straight, then gently convex at the end, gonys slightly convex and ascending, commissure slightly curved throughout. Nostrils overhung and nearly concealed by the projecting bristly feathers of the forehead. Lores and chin likewise bristly. Gape ample, the rictus cleft to below the eyes, furnished with a moderately developed set of bristles reaching about opposite the nostrils. Feet short, though rather stout, adapted exclusively for perching (in *Saxicola*, and other typical genera, the structure of the feet indicates terrestrial habits). Tarsi not longer than the middle toe. Lateral toes of unequal lengths. Claws all strongly curved.

Blue is the principal color of this beautiful genus, which contains three species, all of them occurring in the Colorado region. They are strictly arboricole, frequent the skirts of woods, coppices, waysides, and weedy fields; nest differently from the Thrushes, in holes, and lay whole-colored eggs; readily become semi-domesticated, like the Swallows, House Wren, and House Sparrow; feed upon insects and berries; and have a melodious warbling song. They are peculiar to America, and appear to have no exact representatives in the other hemisphere.

Wilson's Bluebird

Sialia sialis

Motacilla sialis, *Linn.* SN. i. 1758, 187, no. 25 (ex Cates. et Edw.).—*Linn.* SN. i. 1766, 336, no. 38.—*Turt.* SN. i. 1806, 610.—*Less.* Tr. Orn. 1831, 416.

Motacilla scalis, *Gm.* SN. i. 1788, 989, no. 38.

Ficedula salis, *Schaeffer,* Mus. Orn. 1789, 36, no. 122.

Sylvia sialis, *Lath.* IO. ii. 1790, 522, no 44.—*V.* OAS. ii. 1807, 40, pls. 101, 102, 103,—*Wils.* AO. i. 1808, 56. pl. 3, f.—.—*Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 57.—*Gerhardt,* Naum. iii. 1853, 38.—*Gosse,* Alabama, 1859, 189.—*Freyberg,* Zool. Gart. xi. 1870, 191 (in captivity).

Saxicola sialis, *Bp.* Ann. Lyc. N. Y. ii. 1826, 89.

Ampelis sialis, *Nutt.* Man. i. 1832, 444, fig.

Sialia sialis, *Haldeman,* "Trego's Geog. of Penna. 1843, 77".—*Bd.* BNA. 1858, 222.—*Barn.* Smithson. Rep. for 1860, 1861, 435.—*Gund.* J. f. O. 1861, 324 (Cuba).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 405.—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 159 (Upper Missouri River).—*Verr.* Pr. Essex Inst. iii. 1862, 145.—*Tayl.* Ibis, iv. 1862, 128.—*Gund.* J. f. O. 1862, 177 (Cuba).—*Boardm.* Pr. Bost. Soc. ix. 1862, 124.—*Allen,* Pr. Essex Inst. iv. 1864, 58.—*Bd.* Rev. AB. 1864, 62.—*Dress.* Ibis, i². 1865, 475 (Texas).—*McIlw.* Pr. Essex Inst. v. 1866, 84 (Canada West).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 282.—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Texas).—*Coues,* Am. Nat. ii. 1868, 161.—*Coues,* Pr. Essex Inst. v. 1868, 268.—*Coues,* Pr. Bost. Soc. xii. 1868, 107.—*Haldeman,* Am. Nat. iii. 1869, 159 (claims the name).—*Coop.* Am. Nat. iii. 1869, 32 (Montana).—*Nauman,* Am. Nat. iii. 1869, 390.—*Turnb.* B. E. Pa. 1869, 22; Phila. ed. 15.—*Trippe,* Pr. Ess. Inst. vi. 1871, 115 (Minnesota).—*Allen,* Bull. MCZ. ii. 1871, 260; iii. 1872, 174 (Kansas).—*Holden,* Pr. Bost. Soc. xv. 1872,

194 (Black Hills).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 358.—*Scott*, Pr. Bost. Soc. xv. 1872, 221.—*Wood*, Am. Nat. vi. 1872, 173 (albino).—*Mayn.* B. Fla. 1872, 23.—*Coues*, Key, 1872, 76.—*Gund.* J. f. O. 1872, 409 (Cuba).—*Purdie*, Am. Nat. vii. 1873, 693.—*Trippe*, Pr. Bost. Soc. xv. 1873, 234.—*Ridg.* Bull. Essex Inst. v. 1873, 179 (Colorado).—*Merr.* Am. Nat. viii. 1874, 8.—*Coues*, BNW. 1874, 13.—*Bd. Br. & Ry.* NAB. i. 1874, 62, fig. pl. 5, f. 3.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.

Luscinia sialis, *Giebel*, Vögel, 1860, 44, fig. 94.

Sialia sialis, *Le Moine*, Ois. Canad. 1861, 202.

Sialia wilsonii, "*Sw.* Zool. Journ. iii. 1827, 173".—*Peab.* Rep. Orn. Mass. 1839, 316.—*Burnett*, Pr. Bost. Soc. iv. 1851, 116.—*Cabot*, Naum. ii. Heft iii. 1852, 66.—*Thomps.* NH. Vermont, 1853, 85, fig.—*Woodh.* Sitgreave's Rep. 1853, 68.—*Hoy*, Pr. Phila. Acad. vi. 1853, 313.—*Read*, Pr. Phila. Acad. vi. 1853, 399.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 583.—*Pratten*, Tr. Illinois Agric. Soc. i. 1855, 603.—*Haym.* Pr. Phila. Acad. viii. 1856, 290.—*Bland*, Smithson. Rep. for 1858, 1859, 287 (Bermuda).—*Willis*, Smithson. Rep. for 1858, 1859, 212 (Nova Scotia).—*Hoy*, Smithson. Rep. for 1864, 1865, 438.—[*Chittenden,*] Am. Nat. v. 1871, 167.

Erythaca (Sialia) wilsonii, *S. & R.* FBA. ii. 1831, 210.

Sialia wilsoni, *Bp.* C. & GL. 1838, 16.—*Putn.* Pr. Ess. Inst. i. 1856, 208.—*Scl.* PZS. 1856, 293 (Cordova).—*Kneel.* Pr. Post. Soc. vi. 1857, 233.—*Max.* J. f. O. vi. 1858, 120.—*Scl.* PZS. 1858, 297 (Parada).—*Scl.* PZS. 1859, 362 (Xalapa).—*Scl.* PZS. 1859, 371 (Oaxaca).—*S. & S.* Ibis, i. 1859, 8 (Guatemala).—*Martens*, J. f. O. 1859, 213 (Bermuda).—*Tayl.* Ibis, ii. 1860, 110 (Honduras).—*S. & S.* Ibis, ii. 1860, 29 (Guatemala).—*Owen*, Ibis, iii. 1861, 60 (Guatemala, breeding).

Sialia wilsonia, *Wailes*, Rep. Mississippi, 1854, 319.

Sialia azurea, *Sw.* Philos. Mag. i. 1827, 369.—*Bd.* Rev. AB. 1864, 62 (Mexico).—*Sumich.* Mem. Bost. Soc. i. 1869, 544 (Vera Cruz).

Rubecula carolinensis, *Briss.* Orn. iii. 423.

Blue-backed Red-breast Warbler, *Penn.* AZ. ii. 1785, 398, no. 281.

Rouge-gorge bleue de la Caroline, *Buff.* "v. 212"; PE. 390, f. 1, 2.

Blaue Roth-Kehlein, *Sckaeff.* l. c.

Blaue Sänger, *Giebel*, l. c.

Fauvette bleue et rousse *Le Moine*, l. c.

Bluebird, *Cates*, Car. i. 47, pl. 47.

Blue Redbreast, *Edw.* Birds, pl. 24.

Blue Warbler, *Lath.* Syn. ii. pt. ii. 1783, 446, no. 40.

Common Bluebird, Eastern Bluebird, Wilson's Bluebird, American Bluebird, Red-breasted Bluebird, *Vulg.*

HAB.—Eastern United States, Canada, and Nova Scotia. West to the borders of Montana and Wyoming (Milk River, *Cooper;* Black Hills, *Holden*); and the Rocky Mountains of Colorado and New Mexico. Bermudas. Cuba. Mexico (with *S.* "azurea"). South to Guatemala. Breeds throughout its range. Winters in the Southern States.

CH. SP.— ♂ *Azurea, subtus castanea, ventre albo, rostro pedibusque nigris.* ♀ *Fusco-cærulea, alis caudâque cærulescentibus, infra pallidé rufa, ventre albo.*

♂, in full plumage: Rich azure-blue (clear cobalt), the ends of the wing-quills blackish; throat, breast, and sides of the body deep chestnut; belly and crissum white or bluish-white. The blue extends around the head on the sides and often fore part of the chin, so that the chestnut is frequently cut off from the bill. Length, 6½–7; extent, 12–13; wing, 3¾–4; tail, 2⅝–3.

♂, in winter, fall, and in general when not full-plumaged: Blue of the upper parts interrupted by reddish-brown edging of the feathers, or obscured by a general brownish wash. White of belly more extended; tone of the other under parts paler. In many eastern specimens, the reddish-brown skirting of the feathers of the back blends into a decided dorsal patch; and

when this state, as sometimes happens, is accompanied by more than ordinary extension of blue on the throat, they very closely resemble *S. mexicana*.

♀, in full plumage: Blue of the upper parts mixed and obscured with much dull reddish-brown, becoming bright and pure, however, on the rump, tail, and wings. Under parts paler and more rusty-brown, with more abdominal white than in the male. Little if any smaller than the male.

Young, newly fledged: Brown, becoming blue on the wings and tail, the back sharply marked with shaft-lines of whitish. Nearly all the under parts closely and uniformly freckled with white and brownish. A white ring round the eye; inner secondaries edged with brown. From this stage, in which the sexes are indistinguishable, to the perfectly adult condition, the bird changes by insensible degrees.

In Mexican-bred specimens, the blue has a slight greenish shade, approaching that of *S. arctica*, and does not ordinarily extend on the side of the head below the eyes; the tail is rather longer. This is the basis of *S.* "azurea."

LIKE the Thrasher, the Bluebird barely reaches the confines of the Colorado Basin, fairly within which it does not yet appear to have been found. The northern limit of its distribution is nearly coincident with the boundary of the United States, though including a portion at least of Canada and Nova Scotia. The westernmost quotations I have found are those of Dr. Cooper, Mr. Holden, and Mr. Ridgway, which indicate its extension to the Milk River in Montana, the Black Hills, lying across the boundary between Dakota and Wyoming, and the mountains (probably the eastern foothills) of Colorado Territory. In Mexico, the species occurs together with the slight modification known as *S.* "azurea." It sometimes penetrates to Central America; other extralimital localities assigned are Cuba and the Bermudas, to which doubtless the Bahamas should be added. It breeds indifferently throughout its United States range, and spends the winter in great numbers in the Southern States.

There is no occasion to speak of the Bluebird's habits and manners, familiar to every one. In the Middle States, it is one of the earliest spring arrivals, with the Robins, Grackles, and Pewits, before the Swallows come; it is occasionally observed during warm weather in February, or even in January, and may be suspected even of lingering through the winter when not too severe. But it disappears in inclement weather, doubtless taking the short flight southward which brings it to a more congenial climate; yet, ready to yield to the allurements of a few bright sunny days, it soon returns with its cheery, voluble warbling, inseparable from the associations of spring-time, presaging all the hopeful aspirations of the awakening year. This

song is melody without great power; delightful modulation without exhibition of the highest art: it is sweet and charming, lacking great force, yet with a touch of such nervous quality that more is left to the imagination than is revealed. Like the sunshine of the days when the year is young, and nature seems to pause to gather strength for her intended triumphs, this melting music of the Bluebird is full of delicious languor and dreamy voluptuousness, suggesting the possibilities of all things, expressing the realities of none. It is a promise and a pledge of the future, like the unconscious yearning of a maiden for what she knows not.

Western or Mexican Bluebird

Sialia mexicana

Sialia mexicana, *S. & R.* FBA. ii. 1831, 202.—*Bp.* C. & GL. 1838, 16.—*Gamb.* Pr. Phila. Acad. iii. 1846, 113 (California).—*Gamb.* Journ. Phila. Acad. i. 1847, 37.—*Scl.* PZS. 1856, 293 (Cordova).—*Scl.* PZS. 1857, 126 (California).—*Bd.* BNA. 1858, 223.—*Scl.* PZS. 1859, 235 (Vancouver).—*Scl.* PZS. 1859, 362 (Xalapa).—*Henry,* Pr. Phila. Acad. xi. 1859, 106 (New Mexico).—*Xantus,* Pr. Phila. Acad. xi. 1859, 190 (California).—*Heerm.* PRRR. x. 1859, 43.—*Kenn.* PRRR. x. 1859, 23.—*C. & S.* NHWT. 1860, 173.—*Bd.* Ives's Rep. pt. v. 1861, 5.—*Bd.* Rev. AB. 1864, 63.—*Coues,* Ibis, i². 1865, 163 (Arizona).—*Coues,* Pr. Phila. Acad. xviii. 1866, 66 (Fort Whipple, Ariz.).—*Coues,* Pr. Phila. Acad. xx. 1868, 82 (Arizona).—*Brown,* Ibis, iv². 1868, 420 (Vancouver).—*Coop.* Am. Nat. iii. 1869, 32, 185.—*Sumich.* Mem. Bost. Soc. i. 1869, 544 (Vera Cruz).—*Coop.* Pr. Cala. Acad. 1870, 75 (Colorado River).—*Coop.* B. Cal. i. 1870, 28.—*Coop.* Am. Nat. iv. 1871, 758.—*Aiken,* Pr. Bost. Soc. xv. 1872, 194 (Colorado).—*Allen,* Bull. MCZ. iii. 1872, 174 (Colorado).—*Coues,* Key, 1872, 76.—*Aiken,* Am. Nat. vii. 1873, 16.—*Coop.* Am. Nat. viii. 1874. 16.—*Coues.* BNW. 1874, 14; *Trippé,* ibid. 229.—*Bd. Br. & Ry.* NAB. i. 1874, 65, pl. 5, f. 2.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 7.—*Hensh.* ibid. 98.—*Nelson,* Pr. Bost. Soc. xvii. 1875, 356.—*Hensh.* List B. Ariz. 1875, 154.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 161.

Sialia occidentalis, *Towns.* Journ. Phila. Acad. vii. 1837, 188 (Columbia River).—*Aud.* BA. ii. 1841, 176, pl. 135.—*Nutt.* Man. i. 2d ed. 1840, 513.—*Woodh.* Sitgreave's Rep. 1853, 68.—*Henry,* Pr. Phila. Acad. vii. 1855, 310 (New Mexico).—*Newb.* PRRR. vi. 1857, 80.

Sylvia occidentalis, *Aud.* OB. v. 1839, 41, pl. 393.

Sialia cæruleocollis, *Vigors,* Zool. Voy. Blossom, 1839, 18, pl. 3.

Western Bluebird, Mexican Bluebird, *Vulg.*

Hab.—United States and Mexico, from the Eastern foothills of the Rocky Mountains to the Pacific. North to Vancouver. East occasionally to Iowa.

Ch. sp.— ♂ *Supra, cum capite toto et gula, azurea; dorso medio, pectore lateribusque castaneis; ventre medio et crisso griseo-cærulescentibus.* ♀ *Griseo-azurea, dorso medio rufescente, alis, uropygio caudâque cæruleis, pectore lateribusque griseo-rufis, gulâ, ventre crissoque griseo-cærulescentibus.*

♂, adult: Rich azure-blue, including the head and neck all around. A patch of purplish-chestnut on the middle of the back; breast and sides rich chestnut; belly and vent dull blue or bluish-gray. Bill and feet black. Size of the last species.

♀, and young: The changes of plumage of this species are precisely coincident with those of the Eastern Bluebird, and therefore need not be repeated. Immature birds may be recognized, at any rate in the great majority of instances, by traces at least of difference in color between the middle of the back and the other upper parts, and between the color of the throat and of the breast. But probably very young birds in the streaky stage could not be determined with certainty if the locality were unknown.

In some adult males, the dorsal patch is much restricted, or even broken into two scapular patches with continuous blue between; and similarly the chestnut of the breast sometimes divides, permitting connection of the blue of the throat and belly. Specimens with little trace of the dorsal patch are with some difficulty distinguished from those samples of *S. sialis* in which there is much blue on the throat—the grayish-blue of the belly, instead of pure white, being, in fact, a principal character. The two species are evidently *very* closely related.

THIS is the most abundant and characteristic species of the genus in the Colorado Basin. There would appear, however, to be some peculiarity in its local distribution, since, according to both Mr. Ridgway and Mr. Henshaw, it has not been seen in Utah. As I stated in the "Birds of the Northwest", certain observations render it probable that, from the general winter resorts of the species in Arizona and New Mexico, it migrates northward along two routes, one the main chain of the wooded Rocky Mountains, the other the Pacific slopes, the Great Basin being thus passed by on either side. Such specialty of movement, however, may be rather apparent than real, and further observations are desirable. The species is resident in most parts of the Colorado Basin, only disappearing for a short time in midwinter from northerly and highly alpine localities. At Carson City, in Nevada, Mr. Ridgway did not see it from the early part of December until the third week in February, when it became numerous. In comparing it with the Rocky Mountain Bluebird, he remarks that, though the two species are associated in winter, they are seldom seen together in summer, since the *arctica* retires to the higher regions to breed, while the *mexicana* remains in the lower districts, among the cottonwoods of the river-valleys and the scattered pines skirting the foothills of the Sierra Nevada. This corresponds well with my observations made at Fort Whipple, Ariz., where *mexicana* is resident and extremely abundant, though *arctica* is rather uncommon, and was noticed only in fall and winter. The local distribution may be further elucidated from Mr. Henshaw's observations:—"In Colorado, it seems to be rather uncommon in the eastern part of the Territory. It was not found in June

near Fort Garland in 1873, nor at Santa Fé, N. Mex., in June of 1874, where, however, the succeeding species was abundant. About July 23, Inscription Rock, N. Mex., appeared to be a favorite locality for the species, and large numbers of both old and young were congregated together in the piñon and cedar trees. From here southward they were frequently seen, commonly among the pines. At Camp Apache, in August, I found them in large flocks in the pine woods, and accompanied by flocks of Warblers, Nuthatches and Titmice, to which they seemed to act as leaders, the whole flock following their flight from tree to tree. It apparently winters in the vicinity of Camp Apache, being found here in quite large flocks in November."

Arctic or Rocky Mountain Bluebird

Sialia arctica

Erythaca (Sialia) arctica, *S. & R.* FBA. ii. 1831, 209, pl. 39 (north to 64½°).

Sialia arctica, *Nutt.* Man. ii. 1834, 573; 2d ed. i. 1840, 514.—*Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193 (Columbia River).—*Bp.* CGL. 1838, 16.—*Aud.* Syn. 1839, 84.—*Aud.* BA. ii. 1841, 176, pl. 136.—*Gamb.* Pr. Phila. Acad. iii. 1846, 113.—*Gamb.* Journ. Phila. Acad. i. 1847, 37.—*McCall,* Pr. Phila. Acad. v. 1851, 215 (Texas).—*Woodh.* Sitgreave's Rep. 1853, 68.—*Henry,* Pr. Phila. Acad. vii. 1855, 310 (New Mexico).—*Kneel.* Pr. Bost. Soc. vi. 1857, 233.—*Bd.* BNA. 1858, 224.—*Maxim.* J. f. O. 1858, 122.—*Henry,* Pr. Phila. Acad. xi. 1859, 106 (New Mexico).—*Bd.* PRRR. x. 1859, 13, pl. 35.—*Kenner.* PRRR. x. 1859, 24.—*Heerm.* PRRR. x. 1859, 44.—*Bd.* Ives's Rep. pt. v. 1861, 5.—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 159.—*Blakis.* Ibis, v. 1863, 60 (Rocky Mountains, 49°).—*Bd.* Rev. AB. 1864, 64.—*Dress.* Ibis, 1865, 476 (Texas).—*Coues,* Ibis, 1865, 163 (Arizona).—*Coues,* Pr. Phila. Acad. xviii. 1866, 66 (Fort Whipple).—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Laredo, Tex.).—*Coop.* Am. Nat. iii. 1869, 32, 189.—*Coop.* Pr. Cala. Acad. 1870, 75.—*Coop.* B. Cal. i. 1870, 29.—*Hold. & Aiken,* Pr. Bost. Soc. xv. 1872, 194.—*Allen,* Bull. MCZ. iii. 1872, 174.—*Coues,* Key, 1872, 76.—*Merriam,* U. S. Geol. Surv. Terr. for 1872, 1873, 671, 712, 713.—*Aiken,* Am. Nat. vii. 1873, 15.—*Ridg.* Bull. Essex Inst. v. 1873, 179.—*Comstock,* Am. Nat. viii. 1874, 76.—*Coues,* BNW. 1874, 14.—*Trippe.* ibid. 229.—*Bd. Br. & Ry.* NAB. i. 1874, 67, pl. 5, f. 4.—*Hensh.* Rep. Orn. Specs. 1874, 40, 72, 98.—*Allen,* Pr. Bost. Soc. 1874, 19.—*Nelson,* Pr. Bost. Soc. xvii. 1875, 339, 343 (Utah).—*Hensh.* List B. Ariz. 1875, 154.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 162.

Sylvia arctica, *Aud.* OB. v. 1839, 38, pl. 393.

Salia arctica, *Stevenson,* U. S. Geol. Surv. Terr. 1871, 463.

Sialia macroptera, *Bd* Stansbury's Rep. 1852, 314, 328.

Arctic Bluebird, Rocky Mountain Bluebird, *Vulg.*

HAB.—United States, and British America to Great Bear Lake, from the eastern foothills of the Rocky Mountains to the Pacific. Texas.

CH. SP.—♂ *Azurea, infra dilutior, subvirescens, abdomine sensim albo; apicibus remigum fuscis, rostro pedibusque nigris.*

♀ *Grisea, uropygio, caudâ alisque cærulescentibus; infrà rufo-grisea, abdomine albicante.*

♂, in perfect plumage: Above rich azure-blue, lighter than in the two foregoing, and with a faint greenish hue; below, paler and more decidedly greenish-blue, fading insensibly into white on the belly and under tail-coverts. Ends of wing-quills dusky; bill and feet black. Larger than the two foregoing species; length, 7 or more; extent, about 13; wing, 4½; tail, 3.

♀: Of a nearly uniform indeterminate rufous-gray, lighter and more decidedly rufous below, brightening into blue on the rump, tail and wings, fading into white on the belly and under tail-coverts. Ends of the tail-feathers as well as of the wing-quills fuscous; outer one of each edged with whitish. A whitish eye-ring.

Young: The changes of plumage with age as well as those with season are parallel with the stages exhibited by the other species. Very young birds, in the streaky stage, are distinguished by their superior size and the greenish hue of the blue on the wings and tail. The inner wing-quills in the specimens before me are edged and tipped with whitish instead of rufous.

IN the preceding notice of *S. mexicana*, I have already alluded to some points in the distribution of this species, and little remains to be said. It is notable as the most northerly representative of the genus, reaching latitude 64° 30′, or about fourteen degrees beyond the usual range of *S. sialis*. It would appear to be also rather more decidedly migratory than *S. mexicana*, and is extremely abundant in some regions, as portions of Dakota and Montana, which the latter rarely if ever reaches. It is nevertheless numerous in portions of Colorado, Utah, Nevada, and Northern Arizona and New Mexico. It breeds as far south at least as Santa Fé in New Mexico; winters at least as far north as Carson City, Nevada, and is consequently resident in the Colorado Basin as a whole. As in the case of *S. mexicana*, it does not seem to have any peculiar habits in comparison with *S. sialis*. Though a good deal has gone on record in both cases, the supposed discrepancies may be reasonably attributed to transient circumstances of observation, or the fluctuating standpoint of comparison assumed. It breeds in the mountains up to an altitude of about 10,000 feet, in holes in trees and similar nooks, just like both its relatives. The eggs are of the same pale bluish color, but rather larger than those of either of the other species, measuring 0.90 to 0.95 in length by about 0.70 in breadth.

CHAPTER III.—DIPPERS

FAM. CINCLIDÆ

CHARS.—Wing of 10 primaries, the 1st of which is spurious, and, like the others, falcate; wing as a whole short, stiff, rounded, and concavo-convex, something like that of a Grebe, or gallinaceous bird. Tail still shorter than the wing, soft, square, of 12 broad, rounded feathers, almost hidden by the coverts, both sets of which reach nearly or quite to the end, the under coverts being especially long and full. Tarsi booted, about as long as the middle toe and claw. Lateral toes equal in length. Claws all strongly curved. Bill shorter than the head, slender, attenuate, and compressed throughout, higher than broad at the nostrils, about straight, but seeming to be slightly recurved, owing to a sort of upward tilting of the superior mandible; culmen at first slightly concave, then convex; commissure nearly straight, but slightly sinuous, to correspond with the outline of the culmen, notched near the end; gonys convex. Nostrils linear, opening beneath a large scale partly covered with feathers. No rictal vibrissæ, nor any trace of bristles or bristle-tipped feathers about the nostrils. Plumage soft, lustreless, remarkably full and compact, water-proof. Body stout, thick-set. Habits aquatic.

This is a small but well defined group, in which the general characters shared by the *Turdidæ*, *Saxicolidæ* and *Sylviidæ* are modified to a degree, in adaptation to the singular aquatic life the species lead. As generally understood, it consists of a single genus, *Cinclus*, to which a second, found in Asia, is sometimes added. These birds frequent clear mountain streams of various parts of the world, chiefly, however, of the Northern Hemisphere. It would scarcely be incorrect to say that they *inhabit* these streams; for a considerable part of their time is actually spent in the water—not merely on or near it—in gleaning for food beneath the surface. It is marvelous what a little change of structure fits them for such an anomalous mode of life—one wholly exceptional in the order to which they

belong, for a parallel with which we must turn not only to the water-birds, but to the lowest representatives of the natatorial group, such as Loons, Grebes, Cormorants, and Penguins. In all the true water-birds, the feet are paddles, or oars, and as such fit instruments of progression. Those that dive but little or not at all use the feet exclusively in swimming; in others, that

Fig. 15.—American Dipper, nat. size.

travel below as well as upon the surface of the water, like those just named, the wings are also brought into requisition as efficient organs of locomotion. But in the Dippers, the feet retain a thoroughly insessorial character, being no more fitted for swimming purposes than those of a Thrush or Sparrow; and when the birds make their aquatic excursions, they swim down, and stay below by means of their wings—in a word, they

fly through the water. It was an old notion that the Dippers could walk on the beds of streams, and various were the ingenious speculations to account for such a phenomenon; for, the specific gravity of their bodies being less than that of water, the puzzle was, how then could they stay below? The fact is, that they can no more walk on the bottom of a stream than St. Peter could walk on the water without some such supernatural assistance as he is alleged to have received. Their flights below the surface require as continuous effort to keep down as ordinary aërial flight demands in order that a bird may stay up in the air. It is the same action in an opposite direction, the operation of the gravitating force being reversed. The bird plunges into the water, heading up stream to stem the current, and flies obliquely downward till it gains the bottom, where it maintains itself by a similar action of the wings, with the body held obliquely head downward. Here the feet may aid it somewhat, by scratching along the ground, or even clinging to such chance inequalities of the surface as may be grasped by the toes, but in no sense can this be considered as walking. The moment its exertions are relaxed, it comes to the surface like a cork, and may be swept helplessly along for some distance by the force of the current before regaining itself. The whole action may be likened to that of some of the water-bugs—the *Notonectes* for example—which row idly about on their backs with long, feathery oar-like feet, and when alarmed seem to make vigorous efforts to propel themselves obliquely downward. It is one of the endless instances of Nature's delight in paradoxes—her magical way of putting the same thing to the most diverse uses, with a touch of her cunning wand. Given a brawling brook, too small, clean, and cold to suit any of the water-birds she has on hand, but just the thing for a kind of Thrush, if he can be made to understand it; when presto! *Cinclus*. The odd little Thrush puts on his water-proof diving apparatus, takes a "header" from the nearest green slippery rock, and likes it so well that he wonders why he never did it before. *Divers* ways of doing things were evidently open to Thrushes in the beginning—and this is one of them.

But I have got off the track of legitimate ornithology, I find—much as the Dipper itself is sometimes carried away when the current is a little too strong. There are about a dozen species, including marked geographical races, of this family, the best known of which is the Water Ouzel of Europe. This bird

has been very successfully studied by William Macgillivray, whose singularly truthful narrative reflects the general economy of the family so clearly that I shall transcribe a portion of his account, especially since it is equally applicable, *mutatis mutandis*, to the single species which is found in North America. I quote the passages which refer more particularly to the bird's actions in the water, as corroborative of what has been already said with less regard to minute detail.

"The flight of the Dipper is steady, direct, and rapid, like that of the Kingfisher, being effected by regularly timed and quick beats of the wings, without intermissions or sailings. It perches on stones or projecting crags by the sides of streams, or in the water, where it may be seen frequently inclining the breast downwards, and jerking up the tail, much in the manner of the Wheatear and Stonechat, and still more of the Wren; its legs bent, its neck retracted, and its wings slightly drooping. It plunges into the water, not dreading the force of the current, dives, and makes its way beneath the surface, generally moving against the stream, and often with surprising speed. It does not however, immerse itself head foremost from on high like the Kingfisher, the Tern, or the Gannett; but either walks out into the water, or alights upon its surface, and then plunges like an Auk or a Guillemot, slightly opening its wings, and disappearing with an agility and dexterity that indicate its proficiency in diving. I have seen it moving under water in situations where I could observe it with certainty, and I readily perceived that its actions were precisely similar to those of the Divers, Mergansers, and Cormorants, which I have often watched from an eminence, as they pursued the shoals of sand-eels along the sandy shores of the Hebrides. It in fact flew, not merely using the wing, from the carpal joint, but extending it considerably, and employing its whole extent, just as if advancing in the air. The general direction of the body in these circumstances is obliquely downwards; and great force is evidently used to counteract the effects of gravity, the bird finding it difficult to keep itself at the bottom, and when it relaxes its efforts coming to the surface like a cork. Montagu has well described the appearance which it presents under such circumstances:—'In one or two instances, when we have been able to perceive it under water, it appeared to tumble about in a very extraordinary manner, with its head downwards, as if picking something; and at the same time great exertion was used, both

by the wings and legs.' This tumbling, however, is observed only when it is engaged in a strong current, and its appearance is greatly magnified by the unequal refraction caused by the varying inequalities of the surface of the water. When searching for food, it does not proceed to great distances under water; but, alighting on some spot, sinks, and soon reappears in the immediate neighbourhood, when it either dives again, or rises on wing to drop somewhere else on the stream, or settle on a stone. Often from a shelving crag or large stone it may be seen making short incursions into the water, running out with quiet activity, and presently bobbing up to the surface, and regaining its perch by swimming or wading. The assertion of its walking *in* the water, *on* the bottom, which some persons have ventured, is not made good by observation nor countenanced by reason and the nature of things. The Dipper is by no means a walking bird: even on land I have never seen it move more than a few steps, which it accomplished by a kind of leaping motion. Its short legs and curved claws are very ill adapted for running, but admirably calculated for securing a steady footing on slippery stones, whether above or beneath the surface of the water. Like the Kingfisher, it often remains a long time perched on a stone, but in most other respects its habits are very dissimilar. . . . On being wounded the Dipper commonly plunges into the water, flies beneath its surface to the shore, and conceals itself among the stones or under the bank. In fact, on all such occasions, if enough of life remains, it is sure to hide itself so that one requires to look sharply after it. In this respect it greatly resembles the Common Gallinule."

The same agreeable writer speaks of the food of the European Dipper as consisting of molluscs and beetles. "I have opened a great number of individuals at all seasons of the year, but have never found any other substances in the stomach than *Lymnææ*, *Ancyli*, Coleoptera, and grains of gravel"—a diet which he considers to account satisfactorily for the bird's subaqueous excursions. He denies that there is any proof of its feeding upon the ova or fry of fish, notwithstanding the assertions of authors to that effect, which have, in many cases, led to its unmerited persecution. Yet there is no doubt that it is somewhat piscivorous; for at least one instance is recorded of its having been seen with a fish in its mouth. (*Saxby*, "Zoologist", xxi, 1863, p. 8631.)

American Dipper

Cinclus mexicanus

Cinclus pallasii, *Bp* Ann. Lyc. N. Y. ii. 1826, 439.—*Bp.* AO. ii. 1828, 173, pl. 16, f. 1 (*nec auct.*).

Cinclus mexicanus, *Sw.* Philos. Mag. i. 1827, 308.—*Scl.* PZS. 1859, 362 (Xalapa).—*Bd.* Rev. AB. 1864, 60.—*Coues,* Pr. Phila. Acad. xviii. 1866, 66 (Arizona).—*? Salv.* Ibis, ii². 1866, 190 (Guatemala).—*Salv.* Ibis, iii². 1867, 120 (monographic).—*Sumich.* Mem. Bost. Soc. i. 1869, 544 (Vera Cruz).—*Coop.* B. Cal. i. 1870, 25, fig.—*Coues,* Key, 1872. 77, f. 18.—*Allen,* Bull. MCZ. iii. 1872, 174 (Utah and Colorado).—*Ridgw.* Bull. Essex Inst. v. 1873, 179.—*Merriam,* U. S. Geol. Surv. for 1872, 1873, 671, 713 (Montana).—*Dall,* Pr. Cala. Acad. —. 1873, — (Unalashka).—*Coues,* BNW. 1874, 10.—*Trippe,* ibid. 229.—*Bd. Br. & Ry.* NAB. i. 1874, 56, fig. pl. 5, f. 1.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 6.—*Hensh.* ibid. 46, 97.—*Hensh.* List B. Ariz. 1875, 154 (White Mountains).—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 159.

Cinclus mexicana, *Allen,* Am. Nat. vi. 1872, 396.

Hydrobata mexicana, *Bd.* BNA. 1858, 229.—*Henry,* Pr. Phila. Acad. xi. 1859, 106 (New Mexico).—*Xantus,* Pr. Phila. Acad. xi. 1859, 190 (California).—*C. & S.* NHWT. 1860, 175.—*Blakist.* Ibis, v. 1863, 60 (Athabasca River).—*Brown,* Ibis, iv². 1868, 420 (Vancouver).—*Coop.* Am. Nat. iii. 1869, 32 (Montana).—*Dall & Bann.* Tr. Chicago Acad. i. 1869, 277 (Alaska).—*Dall,* Am. Nat. iv. 1870, 600.—*Aiken,* Pr. Bost. Soc. xv. 1872, 194 (Colorado).

Cinclus americanus, *S. & R.* FBA. ii. 1831, 173.—*Nutt.* Man. i. 1832, 569.—*Aud.* OB. iv. 1838, 493; v. 1839, 303, pll. 370, 435.—*Aud.* Syn. 1839, 86.—*Towns.* Journ. Phila. Acad. viii. 1839, 153.—*Aud.* BA. ii. 1841, 182, pl. 137.—*Gamb.* Pr. Phila. Acad. iii. 1846, 114 (California).—*Gamb.* Journ. Phila. Acad. i. 1847, 43.—*McCall,* Pr. Phila. Acad. v. 1851, 216 (Texas).—*Heerm.* Journ. Phila Acad. ii. 1853, 264.—*Henry,* Pr. Phila. Acad. vii. 1855, 310 (New Mexico).—*Newb.* PRRR. vi. 1857, 80.—*Heerm.* PRRR. x. 1859, 44.

Cinclus unicolor, *Bp.* Zool. Journ. iii. 1827, 52.—*Bp.* CGL. 1838, 18.

Cinclus mortoni, "*Towns.* Narr. 1839, 337".

Cinclus townsendii, "('*Aud.*') *Towns.* Narr. 1839, 340".

Quid **Turdus townsendii,** *Towns.* Journ. Phila. Acad. viii. 1839, 153, descr. nullâ!

American Dipper; Water Ouzel, *Vulg.*

HAB.—Mountains of Western North America from the region of the Yukon into Mexico.

CH. SP.— ♂ ♀ *Schistaceo-plumbeus, infrà dilutior, capite brunnescente, palpebris plerumque albis.*

♂ ♀, adult, in summer: Slaty-plumbeous, paler below, inclining on the head to sooty-brown. Quills and tail-feathers fuscous. Eyelids usually white. Bill black; feet yellowish. Length, 6 or 7 inches; extent, 10 or 11; wing, 3½–4; tail, about 2¼; bill, ⅜; tarsus, 1⅛; middle toe and claw rather less. Individuals vary much in size.

♂ ♀, in winter, and the majority of not perfectly mature specimens are paler below than the above description would indicate, all the feathers of the under parts being skirted with whitish. The quills of the wing are also conspicuously tipped with white. The bill is largely yellowish at the base.

Young: Below, whitish, more or less so according to age, frequently tinged with pale cinnamon-brown. The whole under parts are sometimes overlaid with the whitish ends of the feathers, shaded with the rufous posteriorly. The throat is usually nearly white; the bill mostly yellow. The white tipping of the wing-feathers is at a maximum; and in some cases the tail-feathers are similarly marked.

MY limited experience with the American Dipper precludes my giving anything particularly to the point from original observations. I never saw it alive excepting on one occasion, when I noticed nothing in its habits not already known .In the "Birds of the Northwest" I brought together nearly all the information we possess, and would refer to that work for the particulars, especially respecting the nest and egg. It is a common inhabitant of the Colorado Basin, in most suitable situations, though there are many eligible mountain streams which it does not seem to inhabit. An occasional departure from its usual habit has been noticed by Mr. Henshaw, who found a pair inhabiting a small isolated pond in the White Mountains of Arizona, seemingly as much at home in this quiet little sheet of water as in the turbulent torrent; though he thought that, in keeping with their surroundings, they had lost somewhat of their usual restlessness and energy. Such choice of still water, however, must not be presumed to be very unusual, since the European species is well known to frequent lakes, especially those which have a shingly or pebbly margin.

NOTE.—I may here allude to some interesting experiments to ascertain the specific gravity of the European Dipper, made by Dr. John Davy, and published in the eleventh volume (new series) of the Edinburgh New Philosophical Journal, p. 265. The specific gravity of the bird's *body* alone, after removal of the skin and feathers, was 1.200; in its natural state, with the feathers on, 0.724. "When under water, few air-bubbles escaped from its feathers, owing probably to their resisting wetting from the oil with which they are pruned, *that* being abundantly supplied by the large oil-gland with which this bird is provided." . . . "Its long bones contained a reddish marrow." The specific gravity of a Wren was 0.890, which, after immersion for twelve hours, had increased to 0.960. The lowest specific gravity was found in the case of the Merlin-hawk—0.570.

CHAPTER IV.—OLD WORLD WARBLERS

FAM. SYLVIIDÆ

LIKE the *Saxicolidæ*, the *Sylviidæ* are a large group of chiefly Old World species, having few representatives in this country. The family is not well distinguished from the *Turdidæ* and *Saxicolidæ*, and no attempt will be made here to cover all its phases by any diagnostic phrase—it is perhaps insusceptible of exact definition. While there are several hundred species of the Eastern Hemisphere, less than a score occur in America. One of these is a typical Sylviine, a species of *Phyllopneuste*, found in Alaska. The other representatives are the two genera *Regulus* and *Polioptila*, each of which most writers now consider the type of a subfamily. They agree in their extremely small size (length four or five inches, less than any of the *Turdidæ* or *Saxicolidæ*), and in possessing ten primaries (by which they are separated from any of the *Sylvicolidæ*, or American Warblers), deeply cleft toes (compare *Troglodytidæ*), and straight, slender bill, with bristly rictus and exposed nostrils (compare *Certhiidæ*, *Paridæ*, and *Sittidæ*). The tarsi are booted in *Regulinæ*, scutellate in *Polioptilinæ*.

SUBFAMILY REGULINÆ: KINGLETS

CHARS.—Tarsi booted, very slender, longer than the middle toe and claw. Lateral toes nearly equal to each other. First quill of the wing spurious, its exposed portion less than half as long as the second. Wings pointed, longer than the tail, which is emarginate, with acuminate feathers. Bill shorter than the head, straight, slender, and typically sylviine, not hooked at the end, well bristled at rictus, with the nostrils overshadowed by tiny feathers.

These characters may be compared with those given beyond under head of *Polioptilinæ*, to which they are antithetical. There is but one genus in America, though several are recognized by some among the Old World species.

Genus REGULUS Cuvier

CHARS.—To the foregoing add: Coloration olivaceous, paler or whitish below, with red, black, or yellow, or all three of these colors, on the head of the adult.

There are only two established species in this country, both of which occur in the Colorado region. They are elegant and dainty little creatures, among the very smallest of our birds excepting the Hummers. They inhabit woodland, are very agile and sprightly, insectivorous, migratory, and highly musical.

Ruby-crowned Kinglet

Regulus calendula

Motacilla calendula, *Linn.* SN. i. 1766, 337, no. 47.—*Forst.* Phil. Tr. lxii. 1772, 407, no. 32.—*Gm.* SN. i. pt. ii. 1788, 994, nos. 47, 47 *b*.—*Turt.* SN. i. 1806, 613.

Sylvia calendula, *Lath.* IO. ii. 1790, 549, no. 154.—*Wils.* AO. i. 1808, 83, pl. 5, f. 3.

Sylvia (Reguloides) calendula, *Gray,* HL. i. 1869, 216, no. 3068.

Regulus calendula, "*Licht.* Verz. 1823".—*Bp.* Ann. Lyc. N. Y. ii. 1826, 91.—*Nutt.* Man. i. 1832, 415.—*Aud.* OB. ii. 1834, 546, pl. 195.—*Bp.* CGL. 1838, 19.—*Aud.* Syn. 1839, 83.—*Towns.* Journ. Phila. Acad. viii. 1839, 154.—*Nutt.* Man. 2d. ed. i. 1840, 500.—*Aud.* BA. ii. 1841, 168, pl. 133.—*Gamb.* Pr. Phila. Acad. iii. 1846. 115.—*Gamb.* Journ. Phila. Acad. i. 1847, 36.—*Woodh.* Sitgreave's Rep. 1853, 67.—*Hoy,* Pr. Phila. Acad. vi. 1853, 313.—*Read,* Pr. Phila. Acad. vi. 1853, 399.—*Henry,* Pr. Phila. Acad. vii. 1855, 309.—*Kennic.* Tr. Illinois Agr. Soc. i. 1855, 583.—*Pratten,* Tr. Illinois Agr. Soc. i. 1855, 603.—*Putn.* Pr. Ess. Inst. i. 1856, 208.—*Scl.* PZS. 1857, 202 (Xalapa).—*Scl.* PZS. 1858, 300 (Parada).—*Bd.* BNA. 1858, 226.—*Scl.* PZS. 1859, 362 (Xalapa), 371 (Oaxaca).—*S. & S.* Ibis, 1859, 8 (Guatemala).—*Henry,* Pr. Phila. Acad. xi. 1859, 106.—*Xantus,* Pr. Phila. Acad. 1859, 190.—*Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Kenner.* PRRR. x. 1859, 24.—*Heerm.* PRRR. x. 1859, 43.—*O. & S.* NHWT. 1860, 174.—*Wheat.* Ohio Agr. Rep 1860, —.—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Bd.* Ives's Rep. pt. v. 1861, 5.—*Reinh.* Ibis, iii. 1861, 5 (Greenland).—*Verr.* Pr. Ess. Inst. iii. 1862, 145.—*Coues,* Pr. Phila. Acad. 1861, 219 (Labrador).—*Boardm.* Pr. Bost. Soc. ix. 1862, 124.—*Hayd.* Rep. 1862, 159.—*Blakist.* Ibis, 1863, 60.—*Bd.* Rev. AB. 1864, 66.—*Scl.* PZS. 1864, 172 (Mexico).—*Allen,* Proc. Essex Inst. iv. 1864, 58.—*Hoy,* Smiths. Rep. for 1864, 1865, 438.—*Dress.* Ibis, 1865, 476 (Texas).—*Coues,* Ibis, 1865, 163 (Arizona).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 282.—*Weiz,* Pr. Bost. Soc. x. 1866, 267 (Labrador).—*Brown,* Ibis, 1868, 420 (Vancouver).—*Coues,* Pr. Bost. Soc. xii. 1868, 107 (South Carolina, winter).—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Laredo, Tex.).—*Turnb.* B. E. Pa. 1869, 22; Phila. ed. 15.—*Coop.* Am. Nat. iii. 1869, 32.—*Dall & Bann.* Tr. Chic. Acad. i. 1869, 276 (Alaska).—*Coop.* Pr. Cala. Acad. 1870, 75.—*Coop.* B. Cal. i. 1870, 33.—*Abbott,* Am. Nat. iv. 1870, 512.—*Dall,* Am. Nat. iv. 1870, 600.—*Parker,* Am. Nat. v. 1871, 168.—*Stev.* U. S. Geol. Surv. for 1870, 1871, 463.—*Allen,* Am. Nat. vi. 1872, 359.—*Aiken,* Pr. Bost. Soc. xv. 1872, 195.—*Coues,* Key, 1872. 78.—*Hart.* Man. Brit. Birds 1872, 107 (Scotland!).—*Ridg.* Bull. Essex Inst. v. 1873, 179.—*Trippe,* Am. Nat. vii. 1873, 498.—*Trippe,* Pr. Bost. Soc. xv. 1873, 234.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 672, 712, 713.—*Merr.* Am. Nat. viii. 1874, 8.—*Abbott,* Am. Nat. viii. 1874, 364, 365.—*Hensh.* Rep. Orn. Specs. 1874, 40, 57, 72, 98.—*Coues,* BNW. 1874, 15.—*B. B. & R.* NAB. i. 1874, 75, pl. 5, f. 9.—*Nelson,* Pr. Bost. Soc. xvii. 1875, 356.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.—*Hensh.* List B. Ariz. 1875, 155.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 164.

Regulus calendulus, *Bp.* Journ. Phila. Acad. iv. 1824, 186.—*Brew.* Journ. Bost. Soc. i. 1837, 437.—*Peab.* Rep Orn. Mass. 1839, 314.—*Thomps.* NH. Vermont, 1853, 84.—*Gould,* PZS. 1858, 290 (Scotland!).—*Coues & Prentiss,* Smiths. Rep. for 1861, 1862. 405.—*McIlwr.* Pr.

Ess. Inst. v. 1866, 84.—*Coues*, Pr. Phila. Acad. xviii. 1866, 66 (Fort Whipple, Ariz.).—*Coues*, Proc. Essex Inst. v. 1865, 268.—*Trippe*, Proc. Essex Inst. vi. 1871, 115.—*Mayn.* B. Fla. 1872, 27.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 361.—*Trippe* apud *Coues*, BNW. 1874, 229.

Reguloides calendula, *Bp.* CA. i. 1850, 292.

Phyllobasileus calendula, *Cab.* MH. i. 1851, 33.

Corthylio calendula, *Cab.* J. f. O. i. 1853, 83.

Regulus cristatus alter vertice rubini coloris, *Bartr.* Trav. Fla. 1791, 292.

Regulus rubineus, *V.* OAS. ii. 1807, 49, pls. 104, 105.—*Less.* Tr. Orn. 1831, 421.

Ruby-crowned Wren, *Edw.* Birds, pl. 254, f. 2.—*Forst.* l. c.

Roitelet rubis, *Buff.* v. 373.—*Le M.* Ois. Canad. 1861, 215.

Ruby-crowned Warbler, *Penn.* AZ. ii. 1785, 413, no. 320.

Ruby-crowned Kinglet, *Aud.* l. c.

HAB.—North America at large. Mexico. Central America to Guatemala at least. Greenland. Accidental in Europe ("BREE, B. Eur. ii. 109").

CH. SP.—♂ ♀ *Naribus semi-nudis.—Virenti-olivaceus, subtus sordidè flavo-albidus, uropygio et marginibus remigum rectricumque flavicantibus, alis albo-bifasciatis, orbitis albis, vertice coccineo.* Jun. *vertice dorso concolore.*

♂ ♀, adult: Upper parts greenish-olive, becoming more yellowish on the rump; wings and tail dusky, strongly edged with yellowish; whole under parts dull yellowish-white, or yellowish- or greenish-gray (very variable in tone); wings crossed with two whitish bars, and inner secondaries edged with the same. Edges of eyelids, lores and extreme forehead hoary whitish. A rich scarlet patch, partially concealed, on the crown. This beautiful ornament is apparently not gained until the second year, and there is a question whether it is ever present in the female. Length, $4\frac{1}{4}$ (a dozen fresh specimens range from $4\frac{1}{10}$ to $4\frac{1}{2}$); extent, $6\frac{3}{8}$ to $7\frac{1}{8}$; wing, 2–$2\frac{1}{8}$; tail, $1\frac{3}{4}$.

Young for the first year (and ♀?): Quite like the adult, but wanting the scarlet patch. In a newly fledged specimen, procured in the Rocky Mountains of Colorado by Major Powell, the wings and tail are as strongly edged with yellowish as in the adult; but the general plumage of the upper parts is rather olive-gray than olive-green, and the under parts are sordid whitish. The bill is light colored at the base, and the toes appear to have been yellowish.

ONE of the most remarkable things about the Ruby-crown is its extraordinary powers of song. It is really surprising that such a tiny creature should be capable of the strong and sustained notes it utters when in full song. The lower larynx, the sound-producing organ, is not much bigger than a good sized pin's head, and the muscles that move it are almost microscopic shreds of flesh. If the strength of the human voice were in the same proportion to the size of the larynx, we could converse with ease at a distance of a mile or more. The Kinglet's exquisite vocalization defies description; we can only speak, in general terms, of the power, purity, and volume of the notes, their faultless modulation and long continuance.

Many doubtless have listened to this music without suspecting that the author was the diminutive Ruby-crown, with whose common-place utterance, the slender wiry "*tsip*", they were already familiar. Such was once the case even with Audubon, who pays a heartfelt tribute to the accomplished little vocalist, and says further—"When I tell you that its song is fully as sonorous as that of the Canary-bird, and much richer, I do not come up to the truth, for it is not only as powerful and clear, but much more varied and pleasing."

This delightful *rôle* is chiefly executed during the mating season, and the brief period of exaltation which precedes it; it is consequently seldom heard in regions where the bird does not rear its young, except when the little performer breaks forth in song on nearing its summer resorts. Its breeding places were long uncertain, or at least not clearly traced out, and it is only a year or two since that its nest was discovered. But it is now pretty certain that its nesting range includes the wooded portions of the country from Northern New England and corresponding latitudes northward. It is said that a nest containing young was recently found in Western New York; though I am not sure that this is an authentic case, I think it probable that the Kinglet will yet be found to breed in the mountains at least as far south as the Middle States, if not further. This seems more probable since the late discoveries of its nesting in the Rocky Mountains, and its unquestionable residence during summer in other elevated regions of the West, even of New Mexico and Arizona. Mr. Henshaw speaks without reserve on this score:—"The species breeds in the heavy pine and spruce forests on the mountains of Colorado, and also in Arizona, both in the White Mountains, and as far south as Mount Graham, in both which localities I saw the old leading about their young, still in the nesting plumage as late as August 1. In the mountains near Fort Garland, Col., it was a common species in June; the pine woods at an elevation of 10,000 feet often echoing with the music of its sweet, beautifully modulated song. ... June 11, while collecting on a mountain near the Rio Grande, I discovered a nearly finished nest, built on a low branch of a pine, which I have little doubt belonged to this bird." Mr. Allen and Mr. Trippe both observed it in Colorado, in summer, at an altitude of from 9 or 10,000 feet up to timber line, and the first-named obtained the young in the vicinity of Mount Lincoln toward the end of July. At Fort Whipple, in

Arizona, I found it extremely abundant in spring from the latter part of March to near the middle of May, in the fall from the latter part of September to November, and judged that it bred in the higher mountains of the vicinity. It is unnecessary to multiply quotations, all going to show a breeding range throughout the mountains of the West from 9,000 feet upward, thence trending eastward along the northern boundary of the United States to Maine and Labrador, and probably sending a spur southward along the Alleghany Mountains. Northwestward it reaches to Alaska, where the bird was found by Mr. W. H. Dall at Nulato.

But in most portions of the United States, the Ruby-crown appears as a migrant or winter resident. Taking an intermediate point, like the District of Columbia for example, where I became familiar with the dainty little creature in my boyhood, we find that it arrives at least as early as the beginning of April, or, in open seasons like the present (1876), a week or two sooner, and remains until the second week in May. It returns in the fall by the end of September, and loiters till November. But it is such a brave and hardy creature that I should never be surprised to find it lingering through the season here, as it does a little further south. For in South Carolina it is one of the abundant winter birds, from October to April, though most numerous in November and March, owing to the recruiting of its ranks by fresh arrivals. Thence through all the Southern States to Texas it is one of the commonest winter birds in suitable localities. Yet a few press on through Mexico, or directly across the Gulf to Central America. In the Colorado Basin, which includes extremes of climatic and topographical conditions, from snow-capped peaks to burning deserts, all the requirements of the bird are fulfilled, and there it is consequently resident—gathering on the higher grounds in summer, spreading over the lower in winter—migrating indeed, but not in the usual sense of that term, since ascent of the mountain-sides answers instead of a journey toward the pole.

Of the eggs of this Kinglet I have nothing to say—they remain unknown; and it is only a little while ago that I should have been perforce as silent respecting the nest. Since Dr. Brewer thought he might "reasonably infer" that the nest was pensile, the discovery has been made that it is not so, showing the care that must be exercised in natural history inferences. The nest was found by Mr. J. H. Batty, in Colorado, July 21,

1873, on the branch of a spruce tree, about fifteen feet from the ground. It contained, I am informed, five young and one egg; the latter did not come under my inspection. The nest is larger than might have been expected—it could hardly be got into a good-sized coffee cup. It is a loosely woven mass of hair and feathers, mixed with moss and some short bits of straw. The nest which Mr. Henshaw believed to be that of a Kinglet was "a somewhat bulky structure, very large for the size of the bird, externally composed of strips of bark, and lined thickly with feathers of the grouse"; it was built on a low branch of a pine.

To observe the manners of the Ruby-crown, one need only repair, at the right season, to the nearest thicket, coppice, or piece of shrubbery, such as the Titmice, Yellow-rumps and other wa blers love to haunt. These are its favorite resorts, especially in the fall and winter; though sometimes, in the spring more particularly, it seems to be more ambitious, and its slight form may be almost lost among the branchlets of the taller trees, where the equally diminutive *Parula* is most at home. We shall most likely find it not alone, but in straggling troops, which keep up a sort of companionship with each other as well as with different birds, though each individual seems to be absorbed in its particular business. We hear the slender wiry note, and see the little creatures skipping nimbly about the smaller branches in endlessly varied attitudes, peering in the crevices of the bark for their minute insect food, taking short nervous flights from one bough to another, twitching their wings as they alight, and always too busy to pay attention to what may be going on around them. They appear to be incessantly in motion—I know of no birds more active than these—presenting the very picture of restless, puny energy, making "much ado about nothing".

American Golden-crested Kinglet

Regulus satrapa

Sylvia regulus, *Wils.* AO. i. 1808, 126, pl. 8, f. 2.

Regulus cristatus, *Bartr.* Trav. Fla. 1791, 291, no. 107 (see *Coues,* Proc. Phila. Acad. 1875, 351).—*V.* OAS. ii. 1807, 50, pl. 107.—*Bp.* Journ. Phila. Acad iv. 1824, 187.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 91.—*Nutt.* Man. i. 1832, 420.—*Aud.* OB. ii 1834, 476, pl. 185.—*Towns.* Journ. Phila. Acad. viii. 1839, 154.

Parus satrapa, "*Illiger*". (Probably only a museum name).

Regulus satrapa, "*Licht.* Verz. 1823, no. 410".—*Bp.* CGL. 1838, 19.—*Aud.* Syn. 1839, 82.—*Aud.* BA. ii. 1841, 165, pl. 132.—*Bp.* CA. i 1850, 291.—*Cabot,* Naum. ii. pt. iii. 1852, 65 (Lake Superior).—*Woodh.* Sitgr. Rep. 1853, 67.—*Hoy,* Pr. Phila. Acad. vi. 1853, 313.—*Henry,* Pr. Phila. Acad. vii. 1855, 309.—*Kennic.* Tr. Illinois Agr. Soc. i. 1855, 583.—*Pratten,* Tr. Illinois Agr. Soc. i. 1855, 603.—*Putn.* Pr. Ess. Inst. i. 1856, 208.—*Bädeker,* J. f. O. 1856, 33, pl. 1, f. 8 (egg; Labrador).—*Scl.* PZS. 1857, 212 (Orizaba).—*Maxim.* J. f. O. vi. 1858, 111.—*Bd.* BNA. 1858. 227.—*Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Henry,* Pr. Phila. Acad xi. 1859, 106.—*Scl.* PZS. 1859, 235 (Vancouver).—*Scl.* PZS. 1860, 251 (Orizaba).—*C. & S.* NHWT. 1860, 174.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 405.—*Boardm.* Pr. Bost. Soc. ix. 1862, 124.—*Verr.* Pr. Essex Inst. iii. 1862, 146.—*Allen,* Pr. Ess. Inst. iv. 1864, 58.—*Lord,* Pr. Roy. Art. Inst. Woolw. 1864, 114 (Vancouver; breeding).—*Bd.* Rev. AB. 1864, 65.—*Hoy,* Smiths. Rep. for 1864, 1865, 438.—*Dress.* Ibis, 1865, 476 (Texas).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 282.—*Allen,* Am. Nat. i. 1867, 43.—*Brown,* Ibis, 1868, 420 (Vancouver).—*Coues,* Pr. Bost. Soc. xii. 1868, 107.—*Dall & Bann.* Tr. Chicago Acad. i. 1869, 277 (Alaska).—*Coop.* Am. Nat. iii. 1869, 32 (Montana).—*Turnb.* B. E. Pa. 1869, 22; Phila. ed. 15.—*Coop.* B. Cal. i. 1870, 32.—*Allen,* Bull. MCZ. ii. 1871, 260 (Florida).—*Trippe,* Am. Nat. vi. 1872, 47.—*Brewst.* Am. Nat. vi. 1872, 306.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 361.—*Mayn.* B. Fla. 1872, 25.—*Coues,* Key, 1872, 78, f. 19.—*Aiken,* Pr. Bost Soc. xv. 1872, 195 (Eastern Colorado).—*Trippe,* Pr. Bost. Soc. xv. 1872, 234 (Iowa).—*Trippe,* Pr. Bost. Soc. xv. 1873, 234.—*Trippe* Am. Nat. vii. 1873, 498.—*Ridg.* Bull. Essex Inst. v. 1873, 179 (Colorado).—*Abbott,* Am. Nat. viii. 1874, 364.—*Coues,* BNW. 1874, 16.—*B. B. & R.* NAB. i. 1874, 73, pl. 5, f. 8.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.—*Hensh.* List B. Ariz. 1875, 154.

Retulus satrapa, *Barn.* Smithson. Rep. for 1860, 1861, 435.

Regulus satrapa *var.* **olivascens,** *Bd.* Rev. AB. 1864, 65.

Regulus satrapus, *Coues,* Pr. Phila. Acad. 1866, 66 ("Arizona").—*McIlwr.* Pr. Ess. Inst. v. 1866, 85.—*Coues,* Pr. Ess. Inst. v. 1868, 263.—*Abbott,* Am. Nat. iv. 1870, 542.—*Trippe,* Pr. Ess. Inst. vi. 1871, 115.

Regulus tricolor, *Nutt.* Man. i. 1832, 420.—*Brew.* Journ. Bost. Soc. i. 1837, 437.—*Peab.* Rep. Orn. Mass. i. 1839, 314.—*Read,* Pr. Phila. Acad. vi. 1853, 399.—*Thomps.* Vermont, 1853, 84.

? Regulus americanus, *Gerhardt,* Naum. iii. 1853, 38.

Golden-crested Warbler, *Penn.* AZ. ii. 1785, 414, n. 321 (excl. Eur. refs.).

Fiery-crowned Wren, *Peab. & Thomps.* ll. cc.

American Golden-crested Kinglet, *Aud.* l. c.

Roitelet huppé, *Le Moine,* Ois. Canad. 1861, 216.

HAB.—The whole of North America. South to Orizaba, Mexico. Winters in most of the United States.

CH. SP.— ♂ ♀ *Naribus obtectis. Virenti-olivaceus, subtus sordide flavo-albus, alis caudâque fuscis flavo limbatis, illis albo-bifasciatis; superciliis cum fronte albidis, vertice nigro— ♂ medio flammeo flavo-limbato, ♀ medio flavo.*

♂, adult: Upper parts olive-green, more or less bright, sometimes rather olive-ashy, always brightest on the rump; under parts dull ashy-white, or yellowish-white. Wings and tail dusky, strongly edged with yellowish—the inner wing-quills with whitish. On the secondaries, this yellowish edging stops abruptly in advance of the ends of the coverts, leaving a pure blackish interval in advance of the white tips of the greater coverts, which, with the similar tips of the median coverts, form two white bars across the wings. The inner webs of the quills and tail-feathers are edged with white. Superciliary line and extreme forehead hoary-whitish. Crown black, inclosing a large space, the middle of which is flame-colored, bordered with pure yellow. The black reaches across the forehead, but behind yellow and

flame-color reach the general olive of the upper parts. Or, the top of the head may be described as a central bed of flame-color, bounded in front and on the sides with clear yellow, this similarly bounded by black, this again in the same manner by hoary-whitish. Smaller than *R. calendula*. Length, 4 inches; extent, 6¼–7; wing, 2–2⅛; tail, 1⅝.

♀, adult; and young: Similar to the adult male, but the central field of the crown entirely yellow, inclosed in black (no flame-color). I have never seen a newly-fledged specimen; but birds of the year, in the fall, always show black and yellow on the head, and I presume this appears with the first feathering.

FIG. 16.—Golden-crested Kinglet.

Specimens vary considerably in the shade of the general coloration, being sometimes quite yellowish or greenish, at other times more ashy above, except on the rump, and nearly white below. Nor is this a matter of age or season, for it is shown by equally perfect spring specimens. I am unable to verify a supposed more greenish hue in western specimens; in point of fact, some of the richest specimens I ever saw are among those I collected years ago about Washington, D. C.

UNLIKE the Ruby-crown, the Gold-crest is far from conspicuous in the *Ornis* of the Colorado Basin. I find that I am usually quoted as authority for its occurrence in Arizona; but I expressly stated, in my paper published in 1866, that I had myself never met with it there. I cannot now speak positively of the authority upon which I relied for including it among the birds of that Territory, but think it was Dr. S. W. Woodhouse, who speaks of it as very abundant in Texas and *New Mexico*, the latter including Arizona at the time he wrote. It is given in none of the Pacific Railroad Reports, nor in the Mexican Boundary Survey, nor in Ives's Colorado River Survey,

all of which works mention the other species. Mr. Henshaw places it in his List of the Birds of Arizona, but quotes me. Mr. Ridgway includes it without remark in his List of the Birds of Colorado Territory, where, however, neither Mr. Allen nor Mr. Trippe appears to have observed it, though Mr. C. E. Aiken found it. It is omitted from Mr. Henshaw's List of the Birds of Utah. Mr. Ridgway found it in the West Humboldt Mountains, and Dr. Cooper in the Sierra Nevada. From these data, and others that might be given, its rarity in the Great Basin and southward is clearly perceived; yet of its actual presence in portions of the region drained by the Colorado and its tributaries there is of course no doubt. It is stated not to have been found south of Fort Crook, California, on the west coast. In Mexico, it has been traced to Orizaba. Details of its local distribution aside, its general range is much the same as that of the Ruby-crown, including North America at large.

Yet it is upon the whole a more northerly species. This is witnessed both by its apparent absence from Central American localities to which the other species regularly resorts in winter, and by the respective limits of its breeding and wintering ranges. We have no evidence, as yet, of its nesting in the Rocky Mountains at large, as the Ruby-crown does, for the southerly observations made upon it on these and other high mountains of the west seem to have been during the migrations. In the West, it has not been ascertained to breed south of the Columbia, where Nuttall states that he saw it feeding its young, May 21, 1835; Dr. Cooper witnessed the same thing in August at Puget Sound; and Mr. J. K. Lord found the nest and eggs on Vancouver's Island. In the East, the breeding range seems to be nearly coincident with that of *calendula*. The bird has been observed through the summer in Maine, under circumstances which left no doubt of its nesting there; while Audubon saw it engaged with its young in Labrador in August, and Herr F. W. Bädeker has figured the egg from an example procured in the last-named country. The close parallelism in the eastern breeding range of the two species should make us cautious in granting that the Golden-crest is actually absent from most of the Rocky Mountain region where the Ruby-crown breeds; for it will be remembered that the evidence, though strongly presumptive, remains of a negative character. On the other hand, there seems to be a decided discrepancy

between the wintering ranges of the two; for the present species winters regularly and readily in the United States at large—even so far north as New England and Washington Territory.

Dr. Brewer states that the nest and eggs had not been described at the time of his writing; nevertheless, a few lines further on he quotes Mr. Lord's account of "a pensile nest suspended from the extreme end of a pine branch", while the opening paragraph of the article in which the statement occurs gives the reference to Bädeker's figure and description of the egg. The plate indicates a rather roundish egg, though the two specimens figured differ noticeably in size and shape; they are spoken of in the text as—"*niedliche kleine Eierchen mit lehmgelben Fleckchen auf weissem Grunde*", and compared with those of other species illustrated on the same plate. Various authors' accounts of the period at which newly fledged young were observed by them render it probable that two broods are annually reared.

I have long been familiar with the resorts and the sprightly ways of the Golden-crest; but these scarcely call for remark after what has been said about the Ruby-crown, since their habits and manners are closely correspondent. In peering about for insects and larvæ that lurk in the chinks of bark, it is equally tireless, and makes the same show of petty turbulence—another "tempest in a teapot". The song I am not sure I have ever recognized, and most authors have passed it over. Dr. Brewer says:—"Without having so loud or so powerful a note as the Ruby-crown, for its song will admit of no comparison with the wonderful vocal powers of that species, it yet has a quite distinctive and prolonged succession of pleasing notes, which I have heard it pour forth in the midst of the most inclement weather in February almost uninterruptedly, and for quite an interval."

Subfamily POLIOPTILINÆ: Gnatcatchers

Chars.—Tarsi scutellate. Toes very short, the lateral only about half as long as the tarsus; outer a little longer than the inner. First quill spurious, about half as long as the second. Wings rounded, not longer than the graduated tail, the feathers

of which widen toward their rounded ends. Bill shorter than head, straight, broad and depressed at base, rapidly narrowing to the very slender terminal portion, distinctly notched and hooked at the end—thus muscicapine in character. Rictus with well developed bristles. Nostrils entirely exposed.

This is a small group of one genus and about a dozen species, confined to America, chiefly developed in Central and South America. It may not be well placed in the *Sylviidæ*, but is better off here than among the *Paridæ*, where it is put by some. I should not be surprised if its closest relationships were with the true *Muscicapidæ* of the Old World.

Genus POLIOPTILA Sclater

CHARS.—To the foregoing add: Coloration grayish-blue, white below, without red or yellow on head; tail black, bordered with white.

The three North American species occur in the Colorado region, two of them, in fact, being characteristic of this part of the country. They are diminutive birds, of great energy and activity, expert in flycatching, inhabiting woodland, migratory, and musical—though the ordinary call-note is a sharp squeak.

Blue-gray Gnatcatcher

Polioptila cærulea

Motacilla cærulea, *L.* SN. i. 1766, 337 (*Edw.* Glean. pl. 302).

Sylvia cærulea, *Lath.* IO. ii. 1790, 540, no. 121.

Culicivora cærulea, *? D'Orb.* Dis Cuba, 1839,90.—*Brew.* Pr. Bost. Soc. vii. 1860, 306 (Cuba).—*Hoy,* Smiths. Rep. for 1864, 1865, 437.

Sylvania cærulea, *Nutt.* Man. 2d ed. i. 1840, 337.

Polioptila cærulea, *Scl.* PZS. 1855, 11.—*Xant.* Pr. Phila Acad. xi 1859, 191 (California).—*Barn.* Smiths. Rep. for 1860, 1861, 437.—*Bd.* Rev. AB. 1864, 74.—*Dress.* Ibis, 1865, 485 (Texas).—*Coues,* Ibis, 1865, 538 (Arizona).—*Coues,* Pr. Phila. Acad. 1866, 66 (Arizona).—*Coues,* Pr. Essex Inst. v. 1868, 208.—*Cr ues,* Pr. Bost. Soc. xii. 1868, 107.—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Texas).—*Mayn.* B. Fla. 1872, 28.—*Scott,* Pr. Bost. Soc. xv. 1872, 221 (Virginia).—*Allen,* Am. Nat. vi. 1872, 269.—*Brewer,* Am. Nat. vi. 1872, 483.—*Ridg.* Bull. Ess. Inst. v. 1873, 179.—*Merr.* Am. Nat. viii. 1874, 8.—*B. B. & R.* NAB. i. 1874, 78, pl. 6, f 5.—*Brew.* Pr. Bost. Soc. xvii. 1875, 451.—*Hensh.* List B. Ariz. 1875, 155.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 166 (Arizona).

Motacilla caerulea, *Gm.* SN. i. 1788, 992, no. 43.

Culicivora caerulea, *Bp.* CA. i. 1850, 316.—*Gundl.* J. f. O. 1861, 407 (Cuba).

Polioptila caerulea, *Scl.* PZS. 1859, 363 (Xalapa).—*Gundl.* J. f. O. 1861, 324 (Cuba); 1872, 409 (Cuba).

Muscicapa cœrulea, *Bp.* Journ. Phila. Acad. iv. 1824, 172.—*Gamb.* Journ. Phila. Acad. i. 1847, 38.

Culicivora cœrulea, *Aud.* BA. i. 1840, 244, pl. 70.—*Woodh.* Sitgreave's Rep. 1853, 67.—*Henry,* Pr. Phila. Acad. vii. 1855, 309 (New Mexico).—*Putn.* Pr. Essex Inst. i. 1856, 206.

Polioptila cærulea, *Henry,* Pr. Phila. Acad. xi. 1859, 107 (New Mexico).—*Bd.* Ives's Rep. pt. v. 1861, 6.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 282.—*Brewer,* Am. Nat. i. 1867, 116, 117.—*Lawr.* Ann Lyc. N. Y. ix. 1869, 199 (Yucatan).—*Turnb.* BE. Pa. 1869, 28; Phila. ed. 21.—*Coues,* BNW. 1874, 17 —*Hensh.* Rep. Orn. Specs. 1874, 99.

Culicivora coerulea, *Gundl.* J. f. O. 1855, 471 (Cuba).

Culicivora cerulea, *Hoy,* Pr. Phila. Acad. vi. 1853, 309.—*Haym.* Pr. Phila. Acad. viii. 1856, 289.

Motacilla cana, *Gm.* SN. i. pt. ii. 1788, 973, no. 116 (from Buff. Lath., and Penn.).

Sylvia cana, *Lath.* IO. ii. 1790, 543, no. 133.

Regulus griceus, *Bartr.* Trav. Fla. 1791, 291.

Culicivora mexicana, *Bp* CA. i. 1850, 316 (♀; *nec* Cass.).

Polioptila mexicana, *Scl.* PZS. 1859, 363, 373 (Xalapa, Oaxaca) —*S. & S.* Ibis, 1859, 9 (Guatemala).—*Scl.* PZS. 1862, 18 (Southern Mexico).

Ficedula pensylvanica cinerea, *Briss.* "Av. App. 107, no. 79".

Little Blue-grey Fly-catcher, *Edw.* Glean. pl. 302.

Figuier gris-de-fer, *Buff.* "Ois. v. 369".

Cærul an Warbler, *Lath.* Syn. ii. pt. ii. 1783, 490, no. 117.—*Penn.* AZ. ii. 1785, 405, no. 299.

Figuier cendré à gorge cendrée, *Buff.* "v. 319".

Grey-throat Warbler, *Lath.* Syn. ii. pt. ii. 1783, 496, no. 128.—*Penn.* AZ. ii. 1785, 411, no. 315.

Blue-gray Flycatcher, *Aud.* l. c.

Culicivore gris de fer, *D'Orb.* l. c.

FIG. 17.—Head of Blue-gray Gnatcatcher (low. fig.); of Black-capped Gnatcatcher (up. fig.); nat. size.

HAB.—United States from Atlantic to Pacific; north to the Connecticut Valley and Yreka, Cal.; south through Mexico and Lower California to Guatemala. Bahamas. Cuba. Breeds throughout its United States range. Winters on the southern United States border and southward.

CH. SP.—*Cano-cærulea, infrà canescenti alba, alis fuscis cano limbatis, caudâ nigrâ, rectrice externâ albâ, secundâ albo-dimidiatâ, tertia albo-terminatâ, orbitis albis, rostro pedibusque nigris.* ♂ *vertice magis cærulescente, fronte cum strigâ superciliari nigrâ;* ♀ *vertice dorso concolore, fronte et superciliis innotatis.*

♂, adult: Grayish-blue, bluer on the crown, hoary on the rump, the forehead black, continuous with a black superciliary line. Edges of eyelids white, and above these a slight whitish stripe is commonly observed bordering the black exteriorly. Below white, with a faint plumbeous shade, particularly on the breast. Wings dark brown, the outer webs, especially of the inner quills, edged with hoary, and the inner webs of most bordered with white. Tail jet-black, the outer feather entirely or mostly white, the next one about half white, the third one tipped with white. Bill and feet black. Length, 4¼–5; extent, 6¼–7; wing, 2–2⅓; tail about the same.

♀: Like the ♂, but duller and more grayish-blue above; the head like the back, and without any black. Bill usually in part light colored.

The extent of white on the tail varies somewhat; but I have seen no eastern specimens in which the outer feather was not white in all of its extent which was not covered by the under coverts. In some Arizona examples, however, the black which usually exists at the base extends beyond the coverts, and in fact there is little more white on this feather than there is in *P. plumbea,* though the black of the frontlet is intact.

IN its winter resorts among the groves of the southernmost States, this tiny creature grows restless with the first breath of spring, and frets till its impatience is resolved into the mysterious impulse of migration, or absorbed in the more pressing duties of the mating season. Those that are inclined to seek a summer home in the north pass leisurely along in March and April, reaching Virginia and Maryland early in the latter month, and the Middle States by the first of May. They seldom proceed further than this along the Atlantic coast, the Connecticut Valley being the terminus of their route. They have been said to reach Nova Scotia, but this appears doubtful, though in the interior the migration is pushed to the region of the Great Lakes and borders of the British Provinces—west of the Mississippi to Iowa and Nebraska, but apparently not to Minnesota. Those that winter in the valleys of the Rio Grande and Colorado Rivers seem to be more restricted in their movements, as they are not known to penetrate the mountainous regions to the northward much if any beyond the sources of these great streams. On the Pacific slopes, the limit must be fixed, so far as we know now, at latitude 42°.

In the Colorado Basin, this Gnatcatcher is sparingly but generally distributed in summer, and resident, as far as the whole area is concerned, though partially migratory within its limits, since those individuals that repair to northerly or alpine districts to breed retire in the fall to the lower warmer portions. At Fort Whipple, in the spring of 1865, I did not notice their presence until the last week in April; but, as I was not then collecting every day, I may have missed them on their first appearance. At Washington, D. C., where they are more numerous than I have found them to be anywhere in the West, I used to note their arrival each spring for several years in the early part of April. On entering the noble oak forests which still surround the city, at a time when the buds, though swollen, have not yet burst into the leafy canopy which later covers the nakedness of the branches and gives privacy to the life of numberless sylvan sprites besides the Blue-gray Gnatcatchers, I seldom missed first hearing, then seeing, these wayward and capricious little creatures. Though so near the most uncertain and dangerous spot in America—Washington, "Mecca of the unfortunate and the tomb of ambition", the Blue-grays seem to have no fears for the success of their recent pilgrimage from the South, and indulge the aspirations of the day. Not content

with the low estate of the shrubbery, which seems best suited to shelter their insignificance, they mount the tallest trees, and go the rounds with all the bluster and display of assured success. From the tree-tops come the shrill wiry notes, two or three at a time, like *tzee-tzee-tzee*, as the birds skip nimbly from twig to twig, with lowering half-spread wings and nervous twitching of the whole body, in eager quest of insects and larvæ, now pausing a moment to pry more closely into a suspected crevice of the bark, then darting into the air to capture a passing fly, and regaining their perch after almost a somersault. Restless and bustling as all its actions are at such times, there is something more remarkable still in the excessive eagerness betrayed, and the wonderful *élan* with which they dash upon their prey—as if they would crowd the business of a lifetime into its early days, and seize its prizes with the first impetuous assault. We must admire such spirit, even after we have learned it is unsafe.

Days pass in this incessant activity, this impetuous revolt from the monotony of idleness, till other impulses are stimulated with the warmth of the advancing season, and the sharp accents of the voice are modulated into sweet and tender song, so low as to be inaudible at any considerable distance, yet so faultlessly executed and well sustained that the tiny musician may claim no mean rank in the feathered choir. A little later still we may, perchance, if our eyes are sharp, and we know just where to look, discover the extremely beautiful nest which the Blue-gray makes for itself—a structure which cannot fail to excite our wonder and admiration. Excepting the Hummingbird's nest, none can compare with this exquisite specimen of bird architecture, cunningly contrived to combine elegance with comfort, artfully rendered substantial without sacrifice of good taste, and ingeniously screened from observation by the same means that are employed for its ornamentation. True to its aspirations, the bird nestles high in the trees, usually at least twenty yards from the ground, placing the fabric among slender twigs, to which it is woven, oftenest at the extremity of a bough which sways with the wind. To insure the safety of its contents during the motion to which it is often subjected, it is built remarkably deep, and contracted at the orifice, so that the cavity is somewhat purse-shaped, and the general shape outside is like that of a truncated cone. It seems large for the size of the bird—it is sometimes three and a half inches in

height, and nearly as much in width at the base, with a diameter of two inches at the brim. The walls are closely and warmly matted or felted with the softest vegetable material, the decomposed fibre of various plants, thistle-down, and like substances, in some cases woven with spider's web. The structure is artistically finished with stucco-work of lichens all over the outside, which serves the double purpose of perfecting its beauty and making it resemble a natural excrescence. In such an elegant cradle, eggs are laid, to the number of four, five, or even six, measuring scarcely three-fifths of an inch in length and less than half an inch in their greatest diameter—white in color, speckled and dashed, generally over the whole surface, with several shades of reddish or umber brown and lilac. In such a secure home as this, the Blue-gray Flycatcher usually rears its brood unmolested; it has little to fear except from the Cowbird and from the ornithologist, against which enemies no art avails. The parasitic bird might have its own excuse to offer, could its motives be called in question; the other may apologize, after a fashion, by averring that even this slight sketch of the Blue-gray Gnatcatcher's life could not be finished had the nest never been rifled.

Plumbeous Gnatcatcher

Polioptila plumbea

Polioptila plumbea, *Bd.* Pr. Phila. Acad. vii. 1858, 118.—*Bd.* BNA. 1858, 382; atlas, 1860, pl. 33, f. 1 (Arizona).—*Henry.* Pr. Phila. Acad. 1859, 107.—*Bd.* Ives's Rep. pt. v. 1861, 6.—*Bd.* Rev. AB. 1864, 74.—*Coues.* Ibis, 1865, 538.—*Coues*, Pr. Phila. Acad. 1866, 66.—*Coop.* Am. Nat. iii. 1869, 474, 479.—*Coop.* B. Cal. i. 1870, 37, fig.—*Coues*, Key, 1872, 79.—*B. B. & R.* NAB. i. 1874, 80, pl. 6, f. 6.—*Hensh.* List. B. Utah, 1875, 155.

Lead-colored Flycatcher, *Coop.* l. c.

Lead-colored Gnatcatcher; Arizona Gnatcatcher, *B. B. & R.* l. c.

Hab.—(Not known to occur beyond the) Valley of the Gila and Colorado.

Ch. sp.—*Similis præcedenti sed notæo minus cærulescente, et fronte concolore; strigâ solum superciliari nigrâ, alterâ breviore albâ; rectrice externâ pogonio exteriore et apice albis.* ♀ *capite innotato.*

♂, adult: Upper parts like those of *P. cærulea*, but duller and more grayish; no black on the forehead; a short black stripe over each eye, and below this another one of white. Outer tail-feather with the whole outer

web and tip white (much like the *second* feather of *P. cærulea*); the next two feathers tipped with white. Size of *P. cærulea*.

♀: Like the ♂; the upper parts still duller, and frequently with a decided brownish shade; no black over the eye. Only distinguished from ♀ *cærulea* by less white on the tail.

The difference between this species and *P. cærulea* lies only in the less amount of white on the tail and absence of black on the forehead. The black on the head is restricted to a short superciliary stripe, instead of reaching across the forehead. The outer tail-feather has about as much white as there is on the second feather of *P. cærulea*, while the next feather corresponds to the third of *cærulea*. In view of the observed variations in this respect, it may fairly be questioned whether the present is anything more than a local race of *P. cærulea*, as would certainly seem to be the case if specimens also intermediate in the character of the black on the head should be forthcoming. This, however, has not been observed; while the fact that the two forms live side by side in Arizona, each preserving its characters for the most part intact, is evidence in favor of their specific difference.

DR. C. B. R. KENNERLY discovered this bird on Bill Williams' River, Arizona, in 1854, and it was described by Professor Baird during the same year. It does not seem to be a common bird; in fact, the small number of specimens acquired in the interval between its discovery and the present time go to show that it is less abundant in Arizona than *P. cærulea*, though in one sense it is the characteristic species of the Territory. During my residence at Fort Whipple, I did not find it, or, at any rate, did not recognize it, though I took specimens in several other localities, lower than or south of Whipple. In these places, it was seen in summer and early autumn. Dr. Cooper remarks its wintering on the Colorado as high as Fort Mojave. There is nothing to speak of in its habits and manners after what has been said of its near relative.

Black-capped Gnatcatcher

Polioptila melanura

Culicivora atricapilla, *Lawr.* Ann. Lyc. N. Y. v. 1852, 124 (Texas).—*Bd.* Stansbury's Rep. 1852, 328.—*Heerm.* Journ. Phila. Acad. ii. 1853, 262.

Polioptila melanura, *Lawr.* Ann. Lyc. N. Y. vi. 1856, 168 (Texas and California).—*Bd.* BNA. 1858, 382.—*Bd.* Pr. Phila. Acad. 1859, 304 (Cape Saint Lucas).—*Heerm.* PRRR. x. 1859, 39.—*Bd.* Rev. AB. 1864, 68.—*Dress.* Ibis, 1865, 485 (Texas).—*Coues,* Pr. Phila. Acad. 1866, 66 (Arizona).—*Coop.* Am. Nat. iii. 1869, 184.—*Coop.* B. Cal. i. 1870, 37, fig.—*Coues,* Key, 1872, 79, f. 20.—*B. B. & R.* NAB. i. 1874, 81, pl. 6, f. 7.—*Hensh.* List B. Ariz. 1875, 155.

Culicivora mexicana, *Cass,* Ill. i. 1854, 164, pl. 27 (not of Bp.).
Black-headed Gnatcatcher, *Coues,* l. c.
Black-capped Gnatcatcher, *B. B. & R.* l. c.

HAB.—Texas to Southern and Lower California.

CH. SP.—*Similis P. cœruleæ; sed vertice nigro, pogonio externo rectricis exterioris albo-limbato, apice albo.*

♂: Like *P. cœrulea,* but the whole top of the head black. White of tail reduced to a minimum; the outer web of the outer feather being usually edged with white, instead of wholly white, and the tip of the inner web, with the tip of the next feather, white for a very slight space; no white observed on the third feather. Size of the foregoing; tarsi rather longer—about 0.70. ♀: No black on the head.

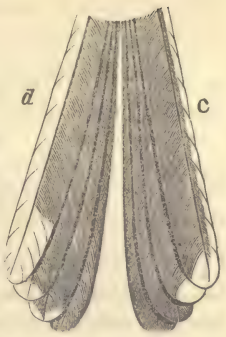

FIG. 18.—*c,* tail of Black-capped Gnatcatcher; *d,* of Plumbeous Gnatcatcher; nat. size.

The male of this species is immediately distinguished from that of either of the two foregoing by having the whole top of the head black. The female, however, presents some difficulty, being mainly distinguishable by the minimum amount of white on the tail, as above described, and the rather longer tarsi, which are $\frac{3}{4}$ of an inch instead of about $\frac{5}{8}$.

THE Black capped Gnatcatcher, first described by Mr. G. N. Lawrence in 1851, was discovered at Ringgold Barracks, Texas, by Capt. J. P. McCown, then of the United States Army, who subsequently changed his allegiance to a temporary confederation which was declared in 1861. Various observers have since met with the bird in different portions of the Southwest, till its range has been ascertained to extend from Texas to California, at the latitude of San Diego, and down the peninsula to Cape Saint Lucas, including a portion of Mexico. I never saw it at Fort Whipple, nor does Mr. Henshaw appear to have met with it in his various tours in the Southwest. Lieutenant Bendire found it resident about Tucson, and Dr. Cooper states that it remains during the winter at Fort Mojave and San Diego. The published records of its habits, excluding some statements that do not seem very well considered, indicate nothing peculiar in comparison with those of *P. cœrulea;* while the nest and eggs, as described by Dr. Brewer, are substantially the same, though some "black" markings of the latter are mentioned. This may be a remarkable circumstance, for, according to the same author (N. Am. Ool. p. 7) "markings of a jet-black color, even to the extent of blotches, spots, or lines, are of very rare occurrence, if not positively unknown".

CHAPTER V.—WREN-TITS

Fam. CHAMÆIDÆ

THIS small group was proposed in 1864, by Professor Baird, for the accommodation of a single genus and species not readily referable to any established family; although, as its proposer suggested, the bird may belong to some recognized exotic group. Its characters, which are in effect the same as those of the genus *Chamæa*, are given under head of the latter.

Genus CHAMÆA Gambel

Chars.—Form and general aspect combining features of Wrens and Titmice. Plumage extraordinarily lax, soft and full. Coloration simple. Tarsal scutella obsolete, or faintly indicated. Toes coherent at base for about half the length of the proximal joint of the middle one. Soles widened and padded, much as in *Paridæ*. Primaries 10, the sixth longest, the third equal to the longest secondaries, the first about $\frac{3}{5}$ as long as the longest; wing thus extremely rounded, and much shorter than the tail (about $\frac{2}{3}$ as long). Tail very long, constituting more than half the entire length of the bird, extremely graduated, with soft, narrow feathers, widening somewhat toward their tips, rounded at the end, the lateral pair not two thirds as long as the middle. Bill much shorter than head, straight, stout, compressed-conical, not notched, with ridged culmen, naked, scaled, linear nostrils, and strongly bristled gape.

The genus may be found referable to the *Troglodytidæ* in the vicinity of *Cinnicerthia*.

The Wren-tit

Chamæa fasciata

Parus fasciatus, *Gamb.* Pr. Phila. Acad. ii. 1845, 265 (California).

Chamæa fasciata, *Gamb.* Pr. Phila. Acad. iii. 1846, 154 (type).—*Gamb.* Journ. Phila. Acad. 2d ser. i. 1847, 34, pl. 8, f. 3.—*Cass.* Ill. i. 1853, 39, pl. 7.—*Xant.* Pr. Phila. Acad. xi. 1859, 191.—*Bd.* RAB. i. 1864, 76.—*Coop.* Am. Nat. iii. 1869, 185.—*Coop.* B. Cal. i. 1870, 39, figs.—*Coues,* Key, 1872, 79.—*Coop.* Am. Nat. viii. 1874, 17.—*B. B. & R.* NAB. 1874, 84, figs., pl. 6, f. 8.—*Nels.* Pr. Bost. Soc. xvii. 1875, 356

Chamæa fasciata, *Cab.* Arch. f. Naturg. 1848, Bd. i. 102.—*Bp.* CA. i. 1850, 206.—*Bd.* BNA. 1858, 370.—*Heerm.* PRRR. x. 1859, 43.
Chamæa fasciata, *Bd.* Stansbury's Rep. GSL. 1852, 332.—*Allen,* Am. Nat. vi. 1872, 350, 404.
Ground Wren, Wren-tit, Ground-tit, *Vulg.*

Hab.—California from the Sierra Nevada to the coast, from the Sacramento Valley to San Diego.

Ch. sp.— ♂ ♀ *Olivaceo-fusca, capite obscuriore, alis caudâque obsoletè transfasciatis; infrà pallidè cinnamomina, lateribus crissoque obscurioribus, gulâ et pectore obsoletè fusco-striatis.*

Adult: Dark brown with an olive shade, the top of the head clearer and somewhat streaky, the wings and tail purer brown, obscurely marked with numerous cross-bars; below dull cinnamon-brown, shaded with olive-brown on the sides and crissum, the throat and breast obscurely streaked with dusky; bill and feet brown; iris white. Length about six inches; wing, 2¼-2½; tail an inch longer, much graduated, the lateral feathers being an inch or more shorter than the middle ones; bill, ½; tarsus, $\frac{9}{10}$; middle toe and claw, ¾. First primary nearly an inch shorter than the longest one.

With a general parine appearance, this species, as indicated by the above measurements, is of remarkable shape, quite unlike that of any other North American bird. It was usually classed with the *Paridæ*, until a separate family was formed for its reception. The tail is very long, much exceeding the wings, and forms rather more than half the entire length of the bird. The wings are exceedingly short and rounded, the exposed portion of the first primary being less than an inch in length. The plumage is remarkably long, soft and lax; the coloration inconspicuous, blended and diffuse. The tarsal scutella tend to become fused, though a few large plates may commonly be observed in front.

THE Wren-tit is one of several interesting discoveries made in California by Dr. William Gambel, of Philadelphia, whose life left an example of how much may be accomplished in a brief space of time by the wise use of natural gifts. He at first called it a *Parus*, but, soon perceiving its strongly distinctive characters, conferred upon it the appropriate title of *Chamæa* (χαμαι, "on the ground"), in allusion to its terrestrial habits. According to his accounts, which remain the most accurate and pertinent of those which have thus far reached me, I gather that its habits are quite Wren-like; that it inhabits shrubby and weedy places, is restless and active, expert in eluding observation, and clamorous in resenting intrusion of its haunts, with harsh scolding notes; that it shares, furthermore, the very Wren-like way of holding the tail erect at times, and nervously twitching it. He observed its manner of searching for its insect food by scrambling sideways about the weeds and bushes; and speaks of other notes it possesses more musical

than its usual scolding cries—a succession of slow monotonous whistling notes prolonged with a trill. Dr. J. G. Cooper, who found the bird "common everywhere west of the Sierra Nevada, on dry plains and hillsides covered with chaparral and other shrubby undergrowth", describes the nest and eggs, which he discovered at San Diego during the last week of April, 1862. The nest was placed in a shrub about three feet from the ground, and was "composed of straws and twigs mixed with feathers, firmly interwoven", lined with grass and hair; the cavity was a little less than two inches wide, and about as deep. "The eggs were 0.70 x 0.52 inch in size, and pale greenish blue" in color.

I have myself never seen this curious bird alive; and I hesitated to bring it into the present connection. A short notice, however, of the interesting species seemed desirable, and I concluded to introduce it, on the strength of its occurrence in the country about Fort Tejon, at the western edge of the interior basin—particularly since there is no doubt in my own mind that the bird actually inhabits a small part of the Colorado water-shed. It is, however, characteristic of the coast region from the Sacramento Valley to Lower California, and back from the coast to the Sierra Nevada. There is even a record of its probable or possible presence in Colorado Territory; but this is so extremely doubtful that I shall not refer to it more explicitly—I have learned too much of the "growing apace" of ornithological ill weeds that once take root. For all we know, *Chamæa* remains a singularly isolated form, so restricted in habitat, and so widely separated from former or present allies, that the wonder is how it was ever developed in this place without leaving a trace of its ancestry.

CHAPTER VI.—TITMICE

Fam. PARIDÆ

EXCEPTING the aberrant genus *Auriparus*, which perhaps belongs elsewhere (see beyond), the North American *Paridæ* are all very closely interrelated, and agree in the following characters:—Bill very short and stout, straight, compressed-conoid in shape, not notched nor with decurved tip, its under as well as upper outline convex. Rictus without true bristles, but base of the bill covered with tufts of bristly feathers directed forward, entirely concealing the nostrils. Feet stout; tarsi distinctly scutellate, longer than the middle toe; toes rather short, the anterior soldered together at the base for most of the length of the basal joint of the middle one. Hind toe with an enlarged pad beneath, forming, with the consolidated bases of the anterior toes, a broad firm sole. Wing with 10 primaries, of which the first is very short or spurious, scarcely or not half as long as the second; wing as a whole rounded, scarcely or not longer than the tail, which latter is rounded or graduated and composed of 12 narrow soft feathers, with rounded or somewhat truncated tips. Plumage long, soft and loose, without bright colors (again excepting *Auriparus*) or well marked changes according to sex, age or season. Size small (length under 7 inches).

There is really a close similarity in external form—borne out to some extent in habits—between the Titmice and the Jays. Thus a species of *Parus* is hardly distinguishable in details of form from *Perisoreus*, and *Lophophanes* as closely resembles *Cyanurus*. There will, however, be no difficulty in distinguishing them, if only by the arbitrary criterion of *size*—for all the Jays are much larger than any Titmice. In the assemblage of upward of a hundred species which, according to conventional usage, compose the *Paridæ*, certain aberrant forms are generally separated as subfamilies; but a large majority are referable to the

Subfamily PARINÆ: True Titmice

The familiar Chickadee, so called from its quaint notes, which are thought to resemble the syllables *chick'-ă-dēē*, stands as a typical representative of this group. The accredited species, to the number of about seventy, are, with few exceptions, confined to the northern hemisphere, and abound in most parts of Europe, Asia and North America. A strong family likeness runs through the whole of them, and their habits and manners in most respects are much the same. The principal exception to this statement is found in the methods of nidification, which vary greatly—some species building in holes of trees, which they excavate like woodpeckers, while others construct immense purse-like pensile nests of grasses or mosses. They are for the most part hardy birds, capable of enduring great cold with impunity; this circumstance, which, with their omnivorous tastes, renders procuring of food of one kind or another easy at all seasons, causes them to be non-migratory, or only imperfectly so. Their musical ability is decidedly of a low order, though they have a great variety of hearty and not displeasing notes. They are very active, restless, energetic and industrious birds, withal turbulent, self asserting, and in the presence of man heedless to a degree. Among their own kind, they are sociable, in some cases almost gregarious, but are accused of being tyrannical and cruel, like Jays, toward weaker or more defenseless species. They are very prolific, not only laying a large clutch of eggs, but often rearing more than one brood annually; as a consequence, they are usually abundant wherever found at all. They are chiefly confined to wooded country; the boreal species of America, like *Parus hudsonicus*, haunt the coniferous forests; others, for the most part, prefer thickets, shrubbery and undergrowth.

The four genera to be here treated will be readily distinguished by the following characters.

Genus LOPHOPHANES Kaup

Chars.—Head crested. Wings and tail rounded, of about equal lengths, and about as long as the body. Bill conoid-compressed, with upper and under outlines both convex. No yellow on head nor red on wing. Plumage lax, much the same at all ages and seasons. Average size of the species at a

maximum for this group. Nests excavated in trees. Eggs spotted.

There are four perfectly good American species of "Tufted Titmice", only two of which are known to occur in the Colorado Basin. For convenience of comparing the three western species with the eastern one, the characters of the latter are subjoined.*

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* **Lophophanes bicolor.—Tufted Titmouse.**

Parus bicolor, *L.* SN. i. 1766, 340 (Cates. i. pl. 57).—*Gm.* SN. i. 1788, 1005.—*Lath.* IO. ii. 1790, 567.—*Turt.* SN. i. 1806, 621.—*Wils.* AO. i. 1808, 137, pl. 8, f. 5.—*Bp.* Journ. Phila. Acad. iv. 1825, 255.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 100.—*Less.* Tr. Orn. 1831, 456.—*Aud.* OB. i. 1831, 199, pl. 39—*Nutt.* Man. i. 1832, 236.—*Temm.* Man. iii. 1835, 210.—*Bp.* C. & G. L. 1838, 20.—*Aud.* Syn. 1839, 78.—*Aud.* BA. ii. 1841, 143, pl. 125 ("Nova Scotia").—*Linsl.* Am. Journ. Sci. xliv. 1843, 255 (Connecticut).—*Gir.* BLI. 1844, 78.—*Read,* Pr. Phila. Acad. vi. 1853, 397 (Ohio).—*Brew.* Pr. Bost. Soc. iv. 1854, 325.—*Henry,* Pr. Phila. Acad. vii. 1855, 309 (?? New Mexico).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 584.—*Haym.* Pr. Phila. Acad. viii. 1856, 290 (Indiana).—*Maxim.* J. f. O. vi. 1858, 118. (N. B.—*Parus bicolor, Fabric.* Fn. Grœnland. 1780, 123, is some other animal.)

Lophophanes bicolor, *Bp.* CA. i. 1850, 228.—*Cass.* Ill. 1853, 18.—*Woodh.* Sitgr. Rep. Zuñi, 1853, 68 (Indian Territory).—*Maxim.* J. f. O. 1858, 117.—*Bd.* BNA. 1858, 384.—*Henry,* Pr. Phila. Acad. xi. 1859, 107.—*Barn.* Smiths. Rep. for 1860, 1861, 437 (Pennsylvania).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 411.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 174.—*Verr.* Pr. Ess. Inst. iii. 1862, 157.—*Bd.* RAB. 1864, 78.—*Allen,* Pr. Ess. Inst. iv. 1864, 83.—*Hoy,* Smiths. Rep. for 1864, 1865, 438 (Missouri).—*Dress.* Ibis, 2d ser. i. 1865, 485 (Texas).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*Coues,* Pr. Bost. Soc. xii. 1868, 107 (South Carolina).—*Coues,* Pr. Ess. Inst. v. 1868, 279 (New England).—*Turnb.* B. E. Pa. 1869, 28; Phila. ed. 21.—*Gregg,* Br. Elmira Acad. 1870, — (Chemung Co. N. Y., rare).—*Abbott,* Am. Nat. iv. 1870, 545.—*Allen,* Bull. MCZ. ii. 1871, 261 (Florida); iii. 1872, 125 (Kansas).—*Scott,* Pr. Bost. Soc. xv. 1872, 221.—*Allen,* Am. Nat. vi. 1872, 264.—*Mayn.* B. Fla. 1872, 32.—*Coues,* Key, 1872, 80, f. 21.—*Snow,* B. Kans. 1873, 6 (resident).—*Ridg.* Am. Nat. vii, 1873, 200.—*Trippe,* Pr. Bost. Soc. xv. 1873, 236 (Iowa).—*Merr.* Am. Nat. viii. 1874, 8, 86.—*Coues,* BNW. 1874, 19.—*B. B. & R.* NAB. i. 1874, 87, pl. 6, f. 1.—*Brew.* Pr. Bost. Soc. xvii. 1875, 451.

Bacolophus bicolor, *Cab.* MH. i. 1850, 91.

Parus cristatus; *Bartr.* Trav. Fla. 1st Am. ed. 1791, 292.

Lophophanes missouriensis, *Bd.* BNA. 1858, 384 (in text).

Toupet Titmouse, *Penn.* AZ. ii. 1785, 423, no. 324.

Mésange bicolore, *Temm.* l. c.

Tufted Titmouse, Crested Titmouse, *Vulg.*

HAB.—Eastern United States, from Texas and Nebraska to the Connecticut Valley.

CH. SP.— ♂ ♀ *Cinereus, dorso paululum olivascente; infrà sordide albus, lateribus rufis; fronte nigrâ; rostro nigricante, pedibus plumbeis.*

♂ ♀: Entire upper parts ashy, the back usually with a slight olivaceous shade, the wings and tail rather purer and darker plumbeous, the latter sometimes showing obsolete transverse bars. Sides of the head and entire under parts dull whitish, washed with chestnut-brown on the sides. A black frontlet at the base of the crest. Bill plumbeous-blackish; feet plumbeous. Length, 6–6½ inches; extent, 9¼–10¼; wing, 3–3¼; tail about the same.

Young: The crest less developed; little if any trace of the black frontlet; sides scarcely washed with rusty.

Plain Titmouse

Lophophanes inornatus

Parus inornatus, *Gamb.* Pr. Phila. Acad. ii. 1845, 265; iii. 1846, 154; Journ. Phila. Acad. 2d ser. i. 1847, 35, pl. 8, f. 2 (California).

Lophophanes inornatus, *Bd.* Stansb. Rep. GSL. 1852, 332.—*Cass.* Ill. 1853, 19.—*Heerm.* Journ. Phila. Acad. ii. 1853, 263.—*Woodh.* Sitgr. Rep. Zuñi R. 1853, 69.—*Bd.* BNA. 1858, 386.—*Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*Heerm.* PRRR. x. 1859, 42.—*Scl.* CAB. 1861, 14.—*Bd.* RAB. 1864, 78.—*Coues,* Pr. Phila. Acad. xviii. 1866, 79 (Fort Whipple).—*Elliot,* BNA. pl. 3.—*Coop.* B. Cal. i. 1870, 42, fig.—*Aiken,* Pr. Bost. Soc. xv. 1872, 195 (Colorado).—*Coues,* Key, 1872, 80, f. 22.—*Ridg.* Bull. Ess. Inst. v. 1873, 179 (Colorado).—*B. B. & R.* NAB. i. 1874, 91, pl. 6, f. 3.—*Coues,* BNW. 1874, 20.—*Coop.* Am. Nat. viii. 1874, 17.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 7.—*Hensh.* Rep. Orn. Specs. 1874, 40, 99.—*Nels.* Pr. Bost. Soc. xvii. 1875, 356.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 167.

Tophophanes inornatus, *Bd.* Ives's Rep. Colorado R. pt. vi. 1861, 6.

Plain Titmouse, Gray-tufted Titmouse, California Titmouse, *Vulg.*

Hab.—United States, from Western Texas and Colorado to the Pacific.

Ch. sp.— ♂ ♀ *Olivaceo cinereus, fronte concolore; infrà cinereo-albus, lateribus concoloribus; rostro pedibusque plumbeis.*

Adults: Entire upper parts dull leaden-gray, with a slight olive shade; the wings and tail rather purer and darker. Below, dull ashy-whitish, without any rusty wash on the sides. No black on the head. Extreme forehead and sides of the head obscurely speckled with whitish. No decided markings anywhere. In size rather less than *L. bicolor;* length usually under six inches, &c.

The young are quite like the adults. These closely resemble the young of *L. bicolor;* but in the latter there are traces at least of the reddish of the sides or black of the frontlet, or both; the general coloration is purer, with more distinction between the upper and under parts, and the size is rather greater. The peculiar speckled appearance of the sides of the head and lores of *L. inornatus* is not observed in *L. bicolor.*

THROUGHOUT the Colorado Basin, the familiar Tufted Titmouse of the Eastern States is replaced by the "plain" species, well named "*inornatus*"—a peculiarly sordid bird, the dull monotony of whose plumage is unrelieved by a single touch of color. It inhabits not only a portion of Western Texas, the whole of New Mexico, Arizona, and corresponding latitudes in California, but also portions of Colorado, Utah and Nevada. How far north it extends is not precisely ascertained; but we may suppose it to be distributed at least half-way across the three last-named Territories, which lie in a tier together. Its southern extreme, similarly, is uncertain; but, wherever the "ragged edge" of its *habitat* may run, the watershed of the great Colorado of the West is its home, and there it resides continually.

It is another discovery which the lamented Gambel made in California, where he first found it, in November, near Monterey, among the evergreen oaks of that vicinity. Since his

time, nearly all the explorers of the Southwest have also met with the bird, and recorded the impressions it left upon them—among whom may be mentioned Woodhouse, Heermann, Xantus, Cooper, Aiken, Ridgway, and Henshaw, all well known in connection with the ornithology of this very interesting region. Whilst living at Fort Whipple, I frequently came upon little troops of these Titmice, especially in the winter-time—my note-book is silent for the summer months, but I never doubted their permanence in that vicinity. Nearly all of us who have had anything to say about the birds speak of their fondness for the tracts of country which are covered with scrubby evergreen oaks; in my "Prodrome" I called it "emphatically an evergreen oak species, eschewing the pines, and frequenting the open hill-sides"—a correct statement, though not a model of literary handicraft. There was, and for aught I know to the contrary there still may be, a large patch of oaks just back of the fort, where I was almost sure to find these Titmice at any time during a portion of the year. This scrubby hillside, by the way, was a favorite resort of mine, not so much for what I expected to find there in the ornithological line, as for what I very sincerely hoped not to find in the way of the aborigines—for it was in full view of the fort, and much safer than the ravines on either side, where I have gone more than once to bring in the naked and still bleeding bodies of men killed by the Apaches. This was in 1864–'65, when the worst passions of both Red and White men were inflamed by atrocities exchanged in kind, and when practical ornithology in Arizona was a very precarious matter, always liable to sudden interruption, and altogether too spicy for comfort. In the course of this volume, I shall probably indulge in some reminiscences of this sort, at times when I feel in the humor, or when I forget what I ought to say about this or that bird; for, according to the simplest laws of association, my memory of many Arizona birds—in fact, my whole notion of the lives of some of them—is pervaded with local color. The recollections of a decade ago make a crowded and strangely jumbled picture, in which the high lights rest on many an interesting bird, while the swarthy savage crouches in the shadow of the background. They tell me things are better now—that the trails are seldom blood-stained: in some states of the social atmosphere, a thunder-shower, with leaden rain, clears up the sky; and so it proved in this case.

In studying the habits of Gambel's Titmouse, surnamed "the

unadorned", I often desired to seize upon some salient point in its character, to contrast it with its eastern relative; but I was as often disappointed. It has character enough, I wot—few birds are of more positive, self-asserting, aggressive personality than the whole family of the Titmice; but, by the same token, there is little to distinguish them from each other. In a word, the *inornatus* is the counterpart of the *bicolor;* in this statement, the whole story of its life is summed.

Before going on to Wollweber's Titmouse, I wish to allude to a closer ally of *inornatus:* I mean the Black-crested Titmouse, *L. atrocristatus.* This bird was discovered in Texas by J. W. Audubon, son of the famous ornithologist, described in 1851 by Mr. Cassin, and treated at some length in the latter's "Illustrations" by Dr. S. W. Woodhouse. This naturalist there speaks of tracing it westward to the headwaters of the Rio San Francisco in "New Mexico" (*i. e.* Arizona). This statement, however, is not repeated in his notice of the species, as prepared for his article in Capt. L. Sitgreaves' Report of the Expedition down the Zuñi and Colorado Rivers—an omission which supports the inference, drawn from other sources, that it is incorrect. None of the recent explorers in New Mexico and Arizona have found the bird; and, so far as we now know, its range is confined, in the United States, to the valley of the Rio Grande. Dr. Brewer does not seem to have noticed that his quotation without comment of this part of Dr. Woodhouse's account is at variance with his own statement made in the preceding paragraph. I think it very likely that the bird really does get across the mountains into the Colorado watershed; but for the present I must dismiss the case with the Scotch verdict—"not proven". So I put the Black-crest* in limbo at the bottom of my page, which is a convenient place to stow away those species which have no business in the book at all.

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* **Lophophanes atrocristatus.—Black-crested Titmouse.**

Parus atricristatus, *Cass.* Pr. Phila. Acad. v. 1850, 103, pl. 2 (Texas).

Lophophanes atricristatus, *Bd.* Stansb. Rep. GSL. 1852, 332.—*Cass.* Ill. 1853, 13, pl. 3.—*Woodh.* Sitgr. Rep. Expl. Zuñi R. 1853, 69.—*Bd.* BNA. 1858, 385.—*Bd.* Rev. 1864, 78.—*Dress.* Ibis, 2d ser. 1865, 485.—*Ccop.* B. Cal. i. 1870, 43, fig. (not in California!).—*Coues,* Key, 1872, 80, f. 23.—*B. B. & R.* NAB. i. 1874, 90, pl. 6, f. 2.

Black-crested Titmouse, Texas Titmouse, *Vulg.*

HAB.—Valley of the Rio Grande, and southward in Mexico.

CH. SP.—♂ ♀ *Olivaceo-plumbeus, infrà cinereo-albus, lateribus rufis, fronte albidâ, cristâ nigrâ.*

♂ ♀: Plumbeous, with a shade of olive, the wings and tail rather darker and purer, edged with the color of the back, or a more hoary shade of the

Bridled Titmouse

Lophophanes wollweberi

Lophophanes wollweberi, *Bp.* CR. xxi. Sept. 1850, 478.—*Westermann,* Bijdr. Dierk. iii. 1851, 15, plate.—*Bd.* Stansb. Rep. GSL. 1852, 332.—*Cass.* Ill. i. 1853, 19.—*Bd.* BNA. 1858, 386; ed. of 1860, pl. 53, f. 1.—*Scl.* PZS. 1858, 299 (Parada, Mex.); 1859, 373 (Oaxaca).—*Henry.* Pr. Phila. Acad. xi. 1859, 107 (New Mexico).—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 14, pl. 15, f. 1.—*Bd.* RAB. 1864, 79.—*Scl.* PZS. 1865, 397 (Vera Cruz).—*Coues,* Ibis, 2d ser. i. 1865, 164 (Arizona).—*Coues,* Pr. Phila. Acad. xviii. 1866, 79 (Arizona).—*Coop.* B. Cal. i. 1870, 43.—*Coues,* Key, 1872, 81, f. 23.—*B. B. & R.* NAB. i. 1874, 93, pl. 6, f. 4.—*Hensh.* Rep. Orn. Specs. 1874, 99.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 168.
Parus wollweberi, *Henry,* Pr. Phila. Acad. vii. 1855, 309 (New Mexico).
Parus annexus, *Cass.* Pr. Phila. Acad. v. Oct. 1850, 103, pl. 1 (Texas).
Parus galeatus, "*Licht.* Mus. Berol."
Lophophanes galeatus, *Cab.* MH. i. 1850, 90.

CH. SP.— ♂ ♀ *Olivaceo-cinereus vertice concolore; infrà cinereo-albidus; lateribus et apice cristæ, torque nuchali, strigâ postoculari et auriculari, necnon gulâ, nigris; lateribus capitis, strigâ superciliari et postoculari, albis.*

♂ ♀: Upper parts olivaceous-ash, the wings and tail darker, edged with the color of the back, or even a brighter tint, sometimes nearly as yellowish as in *Regulus.* Under parts sordid ashy-white. Crest black, with a central field like the back. Whole throat black, as in species of *Parus.* A black line runs behind the eye and curves down over the auriculars, distinguished from the black of the crest and throat by the general white of the side of the head and conspicuous white superciliary stripe. There is also a half-collar of black on the nape, descending on the sides of the neck, there separated from the black crescent of the auriculars by a white crescent, which latter is continuous with the white of the superciliary line. There is considerable whitish speckling in the black of the forehead and lores. Bill blackish-plumbeous; feet plumbeous. Smallest: Length, 5 inches or less; wing, 2½ (2.40 to 2.65); tail the same; bill, ½; tarsus, ⅝ (0.60–0.70).

Young: Chin narrowly or imperfectly black, and some of the above described head-marks obscure or incomplete.

The singularly variegated markings of the head of this species at once distinguish it. The several black and white streaks vary somewhat in their exact relations, and are too intricate to be fully appreciated, except upon fresh or very well prepared specimens, where they will be found to be substantially as above described. The male and female do not appear to differ materially.

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same. Beneath dull ashy-whitish, especially on the breast, the abdomen whiter, the sides chestnut-brown as in *L. bicolor.* Extreme forehead and lores whitish; entire crest glossy black. Bill blackish-plumbeous; feet plumbeous. Small: length about 5 inches; wing, 2¾; tail the same.

I have had no opportunity of examining very young birds to see whether the crest is black at all ages. From analogy, it would be expected that the crest should at first be like the rest of the upper parts.

The specific name in this case should be written *atrocristatus*—the construction of the word requiring the *ablativus instrumenti,* as will be evident on replying to the question, How or *with what* is the bird *cristatus?* Ans. *With black.*

WOLLWEBER'S Titmouse came to us with letters of introduction from three very eminent ornithologists, all written in 1850, and so nearly simultaneously that it is a close question of actual priority. The Prince Bonaparte named it in honor of Wollweber in the issue of the "Comptes Rendus" dated September, 1850. Mr. Cassin described it as *Parus annexus* in the "Proceedings" of the Philadelphia Academy for October, 1850; and it must have been close upon this date that Dr. Cabanis published a description under the name of *Lophophanes galeatus*, adopting the term from Prof. Lichtenstein's museum name, *Parus galeatus*. For, though the whole *Theil* of the "Museum Heineanum" which treats of the *Singvögel* is dated 1850–1, it was published in sheets, and not furnished with an introduction until October, 1851, and the name occurs on the second page of the twelfth "signature", the fourteenth of which bears date January, 1851. No one, however, appears to dispute Bonaparte's actual precedence in the matter. Mr. Cassin figured the bird with his description. The following year, 1851, Professor Westermann also gave a figure in the "Bijdragen tot de Dierkunde"; for the third time it was refigured by Professor Baird, in the Mexican Boundary Survey Report; a fifth illustration is found in Dr. Cooper's work; a sixth in my "Key"; and a seventh in the "History of North American Birds". The curious striping of the head is a specific character which immediately attracts attention, and one well adapted to pictorial illustration. The figure here given, reproduced from the "Key", is a copy (none too good) of the head of that in the Mexican Boundary Report.

FIG. 19.—Head of Bridled Titmouse.

This elegant little species is better known stuffed than alive; the *Stubengelehrten* and some of the "*Balgkrämer*" (among whom it is whispered the namer of *Parus galeatus* is ranked by some) have had it pretty much their own way. Yet the remark, made by Dr. Brewer in 1874, that "Dr. Kennerly is the only one of our naturalists who has mentioned meeting the species in its living form", was not strictly correct. For one, I had become familiar with the bird at Fort Whipple, Arizona, and had summed my observations in a brief phrase:—"Permanent resident; common, more so at least than the preceding [*L.*

inornatus]. Usually semi-gregarious except when breeding. Found in all situations; but chiefly affects the oak thickets, and the chaparral of open hillsides. Generally distributed through the Territory, and extending southward into Sonora." These items, published in 1866, might easily be expanded into a considerable article; but there is no real occasion for much further remark. The *habitat* there indicated, with reference to only one Territory, requires to be enlarged to include New Mexico and Western Texas, as well as the table-lands of Mexico to Oaxaca and Orizaba at least. The species is presented in Dr. Cooper's work, without remark to indicate that it has ever been found in that State (though it probably occurs on the west as well as east side of the great river); but I find no record of its presence in Colorado, Utah or Nevada. As to its habits, we may premise that its nidification and oviposition continue unknown; and that in other respects it agrees so closely with its congeners that shrewd and repeated observation is required to detect any peculiarities. I mentioned above what I considered its leading *spécialité*—gregariousness, not witnessed to the same extent in the other species, though all the Titmice are rather sociable birds. Mr. Henshaw has lately confirmed the statement; speaking of its habits in the fall, he says:—"Instead of being found in small companies or as stragglers on the skirts of the large flocks of other species, it habitually moves about in flocks, composed often of twenty-five, and even more, of its own species; its exclusiveness in this particular being quite noticeable, though once or twice I have seen a few on intimate terms of companionship with the other Chickadees." The same excellent observer refers to what I consider another trait of this species in comparison with its relatives of the same genus: it does not so frequently, nor indeed habitually, descend to the ground in search of insects, acorns and other seeds. Corresponding with its smaller size and more delicate organization, its voice is not so strong; the notes, though vehement and unmistakably "parine", being weaker and of less volume.

Genus PARUS Linnæus

CHARS.—Head not crested. Wings and tail rounded, of approximately equal lengths, and about as long as the body. Bill typically parine (see foregoing characters). No bright colors (in the American species—the expression not applicable to the genus at large); throat usually with a black patch.

Plumage lax, without decided changes with age or season. Size medium. Nest excavated. Eggs spotted.

This genus has developed a greater number of species than

FIG. 20.—A typical *Parus* (*P. atricapillus*).

any other of the family, and may be considered in one sense the typical expression of the whole parine group. There are five or six American species, two of which, perfectly distinct from each other, inhabit the Colorado Basin.

Long-tailed Chickadee

Parus atricapillus septentrionalis

Parus atricapillus, in part, of some authors.—*Maxim.* J. f. O. vi. 1858, 119.

Parus septentrionalis, *Harris*, Pr. Phila. Acad. ii. 1845, 300 (Upper Missouri River).—*Bd.* Stansb. Rep. GSL. 1852, 316—*Cass.* Ill. 1853, 17, 80, pl. 14.—*Bd.* BNA. 1858, 389.—*Scl.* Cat. AB. 1861, 14.—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 164.—*Blak.* Ibis, iv. 1862, 5 (Saskatchewan).—*Blak.* Ibis, v. 1863, 67 (British America).—*Bd.* Rev. 1864, 79.—(?) *Hoy*, Smiths. Rep. for 1864, 1865, 438 (Missouri).—*Coop.* Am. Nat. iii. 1869, 74.—*Coues*, Am. Nat. v. 1871, 369.—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 464.—*Aiken*, Pr. Bost. Soc. xvi. 1872, 195 (Colorado).—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713.

Lophophanes septentrionalis, *Bd.* Stansb. Rep. GSL. 1852, 332.

Parus atricapillus *var.* **septentrionalis**, *Allen*, Bull. MCZ. iii. 1872, 174.—*Coues*, Key, 1872, 81.—*Allen*, Am. Nat. vi. 1872, 396.—*Ridg.* Bull. Ess. Inst. v. 1873, 179.—*Coues*, BNW. 1874, 21, 230.—*Allen*, Pr. Bost. Soc. xvii. 1874, 49.—*B. B. & R.* NAB. i. 1874, 99, pl. 7, f. 2.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 7.—*Hensh.* Rep. Orn. Specs. 1874, 41, 72.—*Allen*, Pr. Bost. Soc. xvii. 1874, 49.—*Nels.* Pr. Bost. Soc. xvii. 1875, 339 (Utah).—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 171.

Parus septentrionalis *var.* **albescens**, *Bd.* BNA. 1858, p. xxxvii.—*Coop.* Am. Nat. iii. 1869, 299.

Parus albescens, *Coop.* Am. Nat. iii. 1869, 74.

HAB.—Region of the Missouri to the Rocky Mountains and south in Alpine districts to New Mexico.

CH. SP.— ♂ ♀ *Dorso ochraceo-cinereo, gastræo ochraceo-albo; alis caudâque fuscis, latè albo-limbatis; lateribus capitis et colli niveis, vertice, nuchâ gulâque nigris. Caudâ alis longiore.*

♂ ♀: Dorsal region ashy, with an ochraceous tinge, especially on the rump; under parts white, with an ochraceous tinge. Wings and tail fuscous, very

strongly edged, especially on the secondaries and lateral tail-feathers, with hoary-white, which usually passes entirely around the ends of these feathers. Sides of the head and neck snowy-white. Cap pure black and very extensive, reaching to between the shoulders. Black of throat extending to the breast. Bill and feet plumbeous-black. Larger than *P. atricapillus*, the tail decidedly longer; average general dimensions about those of the maximum of *P. atricapillus*, and minimum length of tail about the same as the maximum of that of *P. atricapillus*. Length averaging at least 5¼; extent, 8½ or more; wing, 2⅞–2¾; tail, 2⅛–3.

Young: Similar to the adult, but with the usual indications of immaturity in a more sordid coloration, less extent and intensity of the black cap, &c.

The Colorado region does not, it seems, furnish us with typical *atricapillus*, still less with any smaller, darker-colored and shorter-tailed form to correspond with the *P. carolinensis* of similar latitudes on the Atlantic side. In this region, the *Pari* are mainly confined to the upper and to mountainous portions; and, *P. montanus* aside, all the specimens I have seen are derived from the prolongation southward along the mountains of the true *septentrionalis* form. The above description is taken from New Mexican, Coloradan and Utah specimens, which are among the largest, hoariest and longest-tailed I have seen—quite equal in these respects to the series I procured on the Upper Missouri in the winter of 1872–3.

NOTHING in my own experience with this bird, or in the recorded observations of other naturalists, indicates any real differences between its habits and those of its several allies. While at Fort Randall, Dakota, where it is resident and abundant, I thought I perceived a peculiarity in the intonation of the two-syllabled note which is uttered at the approach of the breeding season; but as I only compared the sound with my recollections, the impression received may have had little real foundation. I never saw the bird in Arizona, and do not think it has been found in this Territory; but it occurs in the mountains of New Mexico at corresponding latitudes, and thence northward into the British Possessions.

I shall not here enter into any general account of the habits of the Chickadees; I have already outlined the family traits, and almost every one who is interested in birds is capable of filling in the details from his own experience. But I will reproduce a pleasant passage from Dr. Brewer's pen, to illustrate how far the stout-heartedness of these small creatures may be pushed under the stimulus of maternal love. I only know of a parallel case in the instance of the Crossbill, as told by the same author:—

"Their courage and devotion to their young is a remarkable trait with the whole race, and with none more than with the present species. On one occasion a Black-Cap was seen to fly

into a rotten stump near the roadside in Brookline. The stump was so much decayed that its top was readily broken off and the nest exposed. The mother refused to leave until forcibly taken off by the hand, and twice returned to the nest when thus removed, and it was only by holding her in the hand that an opportunity was given to ascertain there were seven young birds in her nest. She made no complaints, uttered no outcries, but resolutely and devotedly thrust herself between her nestlings and the seeming danger. When released she immediately flew back to them, covered them under her sheltering wings, and looked up in the face of her tormentors with a quiet and resolute courage that could not be surpassed."

Mountain Chickadee

Parus montanus

Parus montanus, *Gamb.* Pr. Phila. Acad. i. 1843, 259 (Santa Fé, N. Mex.); iii. 1846, 155; Journ. Phila. Acad. 2d ser. i. 1847, 35, pl. 8, f. 1.—*Cass.* Ill. i. 1853, 18.—*Woodh.* Sitgr. Rep. Expl. Zuñi, 1853, 68.—*Newb.* PRRR. vi. 1857, 79.—*Bd.* BNA. 1858, 394 (Oregon; Nebraska; Texas).—*Xant.* Pr. Phila. Acad. 1859, 191 (Fort Tejon, Cal.).—*Heerm.* PRRR. x. 1859, 42.—*Henry,* Pr. Phila. Acad. 1859, 107.—*Coop. & Suck.* NHWT. 1860, 194.—*Bd.* Ives's Rep. Col. R. 1861, pt. vi. 6.—*Bd.* Rev. AB. 1864, 82.—*Coues,* Pr. Phila. Acad. xviii. 1866, 79.—*Coop.* Am. Nat. iii. 1869, 75 (Montana).—*Coop.* B. Cal. i. 1870, 46, fig.—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 464.—*Aiken,* Pr. Bost. Soc. xv. 1872, 195 (Colorado).—*Coues,* Key, 1872, 81.—*Allen,* Bull. MCZ. iii. 1872, 174.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 672, 712, 713.—*Ridgw.* Bull. Ess. Inst. v. 1873, 179.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 7.—*Hensh.* Rep. Orn. Specs. 1874, 40, 72, 99.—*Coop.* Am. Nat. viii. 1874, 17.—*Coues,* BNW. 1874, 22, 230.—*B. B. & R.* NAB. i. 1874, 95, fig. pl. 7. f. 5.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 169.

Pœcile montanus, *Coues,* Pr. Phila. Acad. xviii. 1866, 79 (Arizona).

Mountain Chickadee, White-browed Chickadee, *Vulg.*

Hab.—United States, from eastern slopes and foothills of the Rocky Mountains to the Pacific. In southerly portions, chiefly alpine districts.

Ch. sp.— ♂ ♀ *Cinereus, infrà cinereo-albus; alis caudâque cinereo-fuscis, albido-limbatis; lateribus capitis et colli albidis; pileo, nuchâ gulâque nigris, strigâ superciliari albâ.*

♂ ♀ : Upper parts ashy-gray, with scarcely a shade, and only on the rump, of the ochraceous seen in most of the other species; under parts similarly grayish-white, without an ochrey tinge, the middle of the belly nearly white, the rest more heavily shaded. Wings and tail with comparatively little whitish edging—the tail at least with no more than that of *P. carolinensis.* Sides of the head and neck white; top of the head, and the throat, black. A conspicuous white superciliary stripe in the black cap; usually connecting with its fellow across the forehead. Length about 5 inches; wing, 2¼–2¾; tail, rather less; bill, ⅜; tarsus, ⅝.

Young: I have never seen this species without indication at least of the white superciliary stripe, by which it is immediately distinguished from any of its congeners.

This species presents the opposite extreme of *P. septentrionalis* in the general darkness of its colors, little hoary edging of the wings and tail, &c., in these respects more nearly resembling *P. carolinensis*, or even *P. meridionalis*, as it does also in the shortness of the tail as compared with the wings. The white superciliary streak is a conspicuous specific character.

THE White-browed or Mountain Chickadee is a common inhabitant of alpine regions in the Middle and Western faunistic Provinces. It was discovered by Dr. Gambel in New Mexico and Arizona, and has since been ascertained to occur also in the mountains of California, Nevada, Utah, Colorado, Wyoming, Idaho, Montana and Oregon. I have no information that it inhabits Texas, Mexico or Lower California. Throughout the whole region just indicated, it is a resident species; and it is found in the mountains up to the timberline. The vast tracts of coniferous forests that clothe these alpine regions with perennial verdure seem best suited to its requirements. Yet it is not confined to the pine-belts; it often descends to the low country, even in the southern portions of its *habitat*, and is then to be found among the fringes of willows and cottonwoods along the streams. In saying even so little as this, I have about exhausted the scanty material which the bird affords a biographer; its nest and eggs, I think, have never been seen; its habits are in no wise peculiar. The literature which the little bird has occasioned consists, in about equal parts, of variously couched and sometimes spun-out statements to this effect, and of mention of the particular localities, all within the general area above mentioned, where different observers found it more or less abundant.

Genus PSALTRIPARUS Bonaparte

CHARS.—Head not crested. Wings rounded, decidedly shorter than the long, graduated tail, which exceeds the length of the body. Bill thoroughly parine. No bright colors (in our species); neither crown nor throat black. Plumage lax, without decided changes according to age or season. Size very small. Nest pensile, woven; entrance lateral. Eggs white.

This genus includes two, perhaps three, kinds of Titmice, notable for their extremely diminutive stature. In bulk, they scarcely equal a *Polioptila*, and, were it not for the length of

the tail, would rank next to the Hummingbirds in dwarfishness. One author has called them "fairy" Titmice, doubtless thinking of their elfish aspect; nevertheless, they are more positive and substantial pygmies than those we fancy at the court of Queen Mab; while, as for the hanging castles they build, there is room enough in them for all the fairies that ever were seen.

The species inhabiting the Colorado Basin is appreciably different from that of the Pacific coast region, though so closely related that combination of the two under one specific name may be required. The synonymy and characters of the original species* are subjoined for comparison, especially as it extends to the very border of the Colorado watershed.

There is a third species of this genus, the Black-eared Bush-tit (*P. melanotis*), which we may expect to find in the region under consideration. It has been for some years admitted to the United States fauna, on the strength of its occurrence near the Mexican Boundary, but I am not aware that it has actually been known to cross over the border. It is supposed to have been seen in Nevada by Mr. Ridgway.

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* **Psaltriparus minimus.—Least Bush-tit.**

Parus minimus, *Towns.* Journ. Phila. Acad. vii. 1837, 190 (Columbia River).—*Bp.* C. & GL. 1838, 20.—*Aud.* OB. iv. 1838, 382, pl. 353, f. 5, 6.—*Towns.* Journ. Phila. Acad. viii. 1839, 152.—*Aud.* Syn. 1839, 80.—*Aud.* BA. ii. 1841, 160, pl. 130.—*Gamb.* Pr. Phila. Acad. iii. 1846, 155 (California).—*Gamb.* Journ. Phila. Acad. i. 1847, 36.—*(?) Henry,* Pr. Phila. Acad. vii. 1855, 309.

Poecila minimus, *Bp.* CA. i. 1850, 230.

Psaltria minima, *Cass.* Ill. 1853, 20.—*Heerm.* Journ. Phila. Acad. ii. 1853, 264.—*Scl.* PZS. 1857, 126 (California).—*Heerm.* PRRR. x. 1859, 43.

Psaltriparus minimus, *Bp.* CR. xxxviii. 1854, 62.—*Bd.* BNA. 1853, 397.—*Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*Henry,* Pr. Phila. Acad. xi. 1859, 107.—*Coop. & Suckl.* NHWT. 1860, 195.—*Bd.* RAB. 1864, 84.—*Coop.* B. Cal. i. 1870, 48, fig.—*Coop.* Am. Nat. iv. 1871, 757.—*Coues,* Key, 1872, 82.—*Coop.* Am. Nat. vlii. 1874, 17.—*Nels.* Pr. Bost. Soc. xvii. 1875, 356 (California).

Psaltriparus minimus *var.* **minimus,** *B. B. & R.* NAB. i. 1874, 109, fig. pl. 7, f. 9.

Chestnut-crowned Titmouse, Least Titmouse, Least Tit, Least Bush-tit, *Authors.*

HAB.—Pacific Coast region of the United States.

CH. SP.—♂ ♀ *Sordidè plumbeus, infrà albidus, vertice brunnescente.*

♂ ♀: Dull lead-color, frequently with a brownish or olivaceous shade, the top of the head abruptly darker—clove-brown or hair-brown. Below sordid whitish, or brownish-white. Wings and tail dusky, with slight hoary edgings. Bill and feet black. Length, 4 inches or rather less; wing scarcely or not 2 inches; tail, 2 inches or a little more; bill, ¼; tarsus, ⅝.

Young birds do not differ materially. There is considerable variation in the precise shade of the body, but the species always presents the brown cap appreciably different in color from the rest of the upper parts.

Plumbeous Bush-tit

Psaltriparus plumbeus

Psaltria plumbea, *Bd.* Pr. Phila. Acad. vii. 1854, 118 (Colorado Chiquito, Arizona).

Psaltriparus plumbeus, *Bd.* BNA. 1858, 398; ed. of 1860, pl. 33, f. 2.—*Kenner.* PRRR. x. 1859, Whipple's Route, Birds, 25, pl. 33, f. 2 (Arizona).—*Henry,* Pr. Phila. Acad. xi. 1859, 107.—*Bd.* RAB. 1864, 84.—*Coues,* Ibis, 2d ser. i. 1865, 164 (Arizona).—*Coues,* Pr. Phila. Acad. xviii. 1866, 79 (Arizona).—*Coop.* Am. Nat. iii. 1869, 479.—*Coop.* B. Cal. . 1870, 49, fig.—*Coues,* Key, 1872, 82.—*Aiken,* Pr. Bost. Soc. xv. 1872, 195 (Colorado).—*Stev.* U. S. Geol. Surv. Terr. for 1871, 1872, 464 (Green River, Wyoming).—*Coues,* BNW. 1874, 23.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 7.

Psaltriparus minimus *var.* **plumbeus,** *Ridg.* Bull. Ess. Inst. v. 1873, 180.—*B. B. & R.* NAB. i. 1874, 110, pl. 7, f. 10.—*Hensh.* Rep. Orn. Specs. 1874, 40, 99.

Leaden Titmouse, Plumbeous Titmouse, Lead-colored Titmouse, Lead-colored Bush-titmouse, *Authors.*

HAB.—Rocky Mountain region of the United States, southerly; north to Green River, Wyoming; west to the Humboldt Mountains, Nevada.

CH. SP.— ♂ ♀ *Plumbeus, vertice concolore, infrà griseo-albus; lateribus capitis pallidè brunnescentibus; caudâ alis longiore.*

♂ ♀: Clear plumbeous, with little or no olive or brownish shade, the top of the head not different from the back. Sides of the head pale brownish. Under parts as in *P. minimus,* but rather clearer. Tail considerably longer than the wings. Eyes indifferently yellow or dark brown. Length about 4¼ inches; wing, 2 or rather less (1⅞–2⅛); tail, 2¼–2½; bill, ¼; tarsus, ⅝.

This species is very closely related to *P. minimus,* and may ultimately prove to be simply a local race; but I have seen no specimens not readily distinguishable. The total length is somewhat greater, owing to the greater size of the tail, which sometimes exceeds that of the wings by half an inch. The general coloration is clearer and purer; the crown is not different in color from the back, and the cheeks are pale brownish in obvious contrast.

UP to the present time, no one seems to have found the nest of the Plumbeous Bush-tit, though several naturalists besides myself have collected diligently in regions where the bird abounds. Not to pass over so extraordinary a specimen of bird-architecture as the genus *Psaltriparus* has invented and successfully introduced, I shall refer to the nests of *P. minimus,* from which those of the scarcely distinct *P. plumbeus* cannot be presumed to differ. The order of architecture is thoroughly composite; in its execution, the qualities of skill, ingenuity, good taste and laborious perseverance are exhibited on the part of the builders; while the wee creatures seem possessed of no little ambition to make a monument, which, if not so lasting as brass, is infinitely more comfortable and convenient. This nest belongs in the category of pensile structures, being suspended

from twigs of trees or bushes, but it is not a simple cup or basket, open at the top. It resembles the old-fashioned silken purse (which I recall from tradition rather than by actual memory) more than many of the nests called "purse-like" do, the entrance being a circular orifice at the side—nothing but the rings which slipped along these old purses being wanting to render the simile complete. One hardly knows which to admire most—the industry with which such a great feat is executed, or the cunning with which so curious a fabric is wrought—and no one certainly would suspect the owners of the nest to be such pygmies. As Dr. Cooper says, it seems as if it would take a whole flock to get up one such structure. The nest measures in length from six to eight or nine inches, with a diameter of three or three and a half; the general shape is cylindrical, not perfectly expressed however, for the ends are rounded and the top contracted. The orifice is about an inch in diameter. The substance is closely woven of lichens, mosses, very soft plant-fibre, or cottony vegetable matter, slender spears of grass and fibrous rootlets, and lined with the downiest, softest possible material, and a great mass of feathers, some of which may appear at the entrance, or be felted in the substance of the walls. The weaving is usually so well executed that the walls appear pretty firm and smooth from the outside; while their thickness reduces the cavity about one-half. The nest retains the greenish-gray color of the mosses and lichens of which it is principally composed, and the whole affair resembles a natural product. The reader will find, on Audubon's plate already cited, an artistic representation of a nest presented to him by Mr. Nuttall, and as the birds are drawn alongside, in spirited attitudes, the striking disparity in size is illustrated. In this wonderfully elaborate structure, eggs are deposited to the number of six to nine—an egg to every inch of nest; they are pure white, without markings, and measure scarcely or not three-fifths of an inch in length, by less than half an inch in breadth—more exactly, in one instance 0.56 x 0.44. Eggs found by Mr. Nuttall on the Wahlamet or Willamette River in Oregon, about the third week in May, were near hatching; in the south, the bird builds much earlier, Dr. Cooper having observed a nest near San Diego completed by the 1st of March.

This bird, for aught we know to the contrary, is confined to the Pacific coast region. Dr. Brewer, indeed, quotes Dr. Gam-

bel's authority for its abundance "both in the Rocky Mountains and throughout California". But Dr. Gambel, it will be recollected, wrote some years before the Plumbeous Bush-tit was discriminated from the other, and evidently overlooked those slight but nice differences which are impressed upon the bird in the Rocky Mountain region by some climatic or other influences not yet understood. The Least Bush-tit, in fact, could not be made "exceedingly abundant" in this region. The habitat of each is correctly given in the technical portion of the work to which the biographical paragraph in question was contributed.

The Plumbeous Bush-tit was discovered by Dr. C. B. R. Kennerly, then naturalist of Lieutenant Whipple's Surveying Expedition, and afterward of the Northwest Boundary Commission, whose early death, under very deplorable circumstances, left a gap in the ranks of western explorers. He found it on the Colorado Chiquito and Bill Williams' Rivers; and, for a long time after the publication of the species by Professor Baird, its range was supposed to be confined to Arizona. Mr. C. E. Aiken, who has dealt very successfully with the bird-fauna of Colorado, found it in that Territory, where it was occasionally seen during the winter in the eastern foothills of the mountains. It has been traced west to the Humboldt Mountains, Nevada, where Mr. Ridgway observed it in abundance, and north to Green River, Wyoming, where Mr. James Stevenson, the zealous and faithful member of Dr. Hayden's Survey, secured specimens. Its southern limit is unknown; I have seen no Mexican quotations. To what extent, if at all, it is migratory, I have not ascertained, but I am inclined to think it is a resident species wherever found, as is certainly the case within the area of the Colorado. Considering the whole country, from the Rocky Mountains to to the Pacific, the respective ranges of the Plumbeous and Least Bush-tit are nearly complementary, though the latter extends further north on the Pacific coast than the former is known to do in the interior.

These queer little elfs were very numerous about Fort Whipple, where I saw them all the year round, and learned as much about them as any one seems to know. Though living in a coniferous region, they avoided the pine forests, keeping in the oak scrub of the hillsides, and the undergrowth along the creek bottoms and through the numerous ravines that make down the mountain sides. They endured, without apparent

inconvenience, an extreme of cold which sometimes proved fatal to birds of much more seeming hardihood, like Ravens for instance; and were as active and sprightly in the depth of winter as at any other time. I used to wonder how they managed, in such tiny animal furnaces, to generate heat enough to stand such a climate, and speculated whether their incessant activity might not have something to do with it. They always seemed to me model store-houses of energy—conserved to a degree in cold weather, with consumption of no more than was needed to keep them a-going, and thus accumulated for the heavier draft required when, in the spring, the arduous duties of nest-building and rearing a numerous family devolve upon them. Their food at this season consists of various seeds that persist through the winter; during the rest of the year, different insects contribute to their subsistence, and foraging for the minute bugs, larvæ and eggs that lurk in the crevices of bark seems to be their principal business. They are very industrious in this pursuit, and too much absorbed in the exciting chances of the chase to pay attention to what may be going on around them. They are extremely sociable—the gregarious instinct common to the Titmice reaches its highest development in their case, and flocks of forty or fifty—some say even of a hundred—may be seen after the breeding season has passed, made up of numerous families, which, soon after leaving the nest, meet kindred spirits, and enter into intimate friendly relations. Often, in rambling through the shrubbery, I have been suddenly surrounded by a troop of the busy birds, perhaps unnoticed till the curious chirping they keep up attracted my attention; they seemed to *pervade* the bushes. If I stood still, they came close around me, as fearless as if I were a stump, ignoring me altogether. At such times, it was pleasant to see the earnestness with which they conducted affairs, and the energy they displayed in their own curious fashion, as if it were the easiest thing in the world to work hard, and quite proper to attend to serious matters with a thousand antics. They are droll folk, quite innocent of dignity, superior to the trammels of decorum, secure in the consciousness that their wit will carry off any extravagance. I used to call them my merry little philosophers—for they took the weather as it came, and evidently knew how much better it is to laugh at the world than cry with it. When fretted with the friction of garrison-life, I have often sought their society, and amused myself like another Gulliver among the Liliputians.

Genus AURIPARUS Baird

CHARS.—Head not crested. Wings pointed, the second quill being little shorter than the third; the first spurious. Tail little rounded, decidedly shorter than the wings. Bill not typically parine—extremely acute, with straight or slightly concave under outline, and barely convex culmen; longer and slenderer than usual in *Parinæ;* nostrils scarcely concealed by the imperfect ruff. Tarsi relatively shorter than in the preceding genera. Bright colors on head (yellow) and wing (red). Plumage comparatively compact; sexes alike, but young very different from the adult. Size very small. General form sylvicoline. Nest globular, woven. Egg spotted.

This remarkable genus departs widely from ordinary parine characters, and I am far from satisfied with its reference to this family, suspecting that Mr. Lawrence was nearer right in describing the type-species as a *Conirostrum.* The bill is decidedly unlike that of any of the American genera of *Paridæ*, resembling that of some species of the sylvicoline genus *Helminthophaga*, though stouter at base, in this coming still closer to the form found in some exotic genera of *Cœrebidæ* or *Dacnidæ*. Examination of the tongue in the fresh state might give a clue to the true position of the genus. For the rest, the character of the plumage, its changes, and the system of coloration are peculiar as far as American *Paridæ* are concerned.

Yellow-headed Verdin

Auriparus flaviceps

Ægithalus flaviceps, *Sund.* "Öfvers. Svensk. Akad. Förh. vii. pt. v. 1850, 129".

Psaltria flaviceps, *Scl.* PZS. 1856, 37.

Paroides flaviceps, *Bd.* BNA. 1858, 400; ed. of 1860, pl. 53, f. 2.—*Bd.* Pr. Phila. Acad. xi. 1859, 304 (Cape Saint Lucas).—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, 14, pl. 15, f. 2.—*Bd.* Ives's Rep. Col. R. pt. vi. 1861, 6.

Aegithalus flaviceps, *Heerm.* PRRR. x. 1859, Williamson's Route, Birds, 43.

Psaltriparus flaviceps, *Scl.* CAB. 1861, 13.

Auriparus flaviceps, *Bd.* RAB. 1864, 85.—*Coues,* Pr. Phila. Acad. xviii. 1866, 79 (Arizona).—*Coues,* Pr. Phila. Acad. 1868, 83 (the same).—*Coop.* Am. Nat. iii. 1869, 474.—*Coop.* B. Cal. i. 1870, 51, fig.—*Coues,* Key, 1872, 82.—*B. B. & R.* NAB. i. 1874, 112, figs. pl. 7, f. 11.—*Hensh.* Rep. Orn. Specs. 1874, 99.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 173.

Conirostrum ornatum, *Lawr.* Ann. Lyc. N. Y. v. 1852, 112, pl. 5, f. 1 (Texas).—*Bd.* Stansb. Rep. GSL. 1852, 327.—*McCown,* Ann. Lyc. N. Y. vi. 1853, 9 (Texas).

HAB.—Valley of the Rio Grande and of the Colorado (not known north to Colorado or Utah). Lower California to Cape Saint Lucas.

CH. SP.—♂ ♀ *Cinereus, alis caudâque obscurioribus; infrà albidus; capite flavo, tectricibus alarum minoribus rubro-castaneis.*

♂ ♀: Upper parts ashy; under parts dull whitish; wings and tail fuscous, with hoary edgings. Whole head yellow. Lesser wing-coverts rich chestnut-red. Bill blackish-plumbeous; feet plumbeous. Length, 4 inches or rather more; wing, 2 or rather less; tail, 1¾–2¼.

Young: No yellow on head, nor chestnut on the wing. Above, brownish-gray, including the head; below, whitish. Bill pale below.

Before the young has attained the distinctive markings of the species, it is an obscure object, superficially resembling a *Psaltriparus* or a female *Polioptila*. The generic characters, however, will suffice for its recognition. The shape of the bill is peculiar. In its extreme acuteness, it resembles that of a *Helminthophaga*, but it is stouter at the base, and, in fact, to compare a very small thing with a large one, looks curiously similar to the bill of an Oriole (*Icterus*), though the culmen is a little curved.

Specimens vary much as usual in the shade of the ash, sometimes quite pure, in other cases showing an olivaceous or brownish cast. The yellow of the head extends further on the throat than on the crown. It is generally, in adult birds, rich and pure, but is frequently found dull and greenish; again, in highly plumaged specimens, it may be intensified into rich brownish-orange, like that on the head of some of the tropical conspecies of *Dendræca æstiva*. The chestnut on the wing often assumes a rich hæmatitic tint. Specimens differ to an unusual degree in the length of the tail. Thus, one of two examples before me as I write has this member half an inch longer than it is in the other.

I SHALL claim the reader's indulgence to present one more bird supposed to belong to the numerous family of the Titmice. Like the last species noticed, the Verdin is an architect of extraordinary ability, and the history of its nidification should be as conspicuous an item in its biography as the nests themselves are in those localities where the birds are abundant. At Cape Saint Lucas, according to Mr. Xantus, Verdins are the most numerous of all the birds which nest there; and nearly half of the eggs he collected in the summer of 1859 were those of this kind—more than a hundred in all. The nest is described as a large globular mass of twigs, lined with down and feathers, having the entrance on one side, near the bottom. This singular structure is suspended from the extremity of a branch of some algarobia, acacia or mimosa, at a varying height—sometimes only two or three feet from the ground, sometimes much higher. In the Colorado and Mojave River Valleys, Dr. Cooper observed many nests, one of which he describes with particularity:—"On the 10th of March, I found a pair building, first forming a wall nearly spherical in outline, out of the thorny twigs of the *Algarobia* (in which tree the nest is usually built), then lining it with softer twigs, down, leaves of plants, and feathers, covering the outside with

thorns, till it becomes a mass as large as a man's head, or 9.00 x 5.50 inches outside, the cavity 4.50 x 2.70, with an opening in one side, just large enough for the bird to enter. On the 27th of March, I found the first nest containing eggs, and afterwards many more. There were in all cases four eggs [others say four to six], pale blue, with numerous small brown spots, chiefly near the large end, though some had very few spots and were much paler; size 0.60 x 0.44 inch. In one nest which I watched they hatched in about ten days, and in two weeks more the young were ready to leave the nest."

I never saw the Verdin at Fort Whipple, and do not think it leaves the lower portions of the Territory for the mountains; nor have other observers found it in elevated portions of Arizona or New Mexico, though it occurs in suitable places across the country from the Rio Grande Valley to that of the Colorado, and thence down the peninsula of Lower California to Cape Saint Lucas. No fairly full account of its habits, except as far as its nest-building is concerned, has appeared, and I particularly regret my inability to complete the history of the species. I bring no message from this interesting bird—only gleaning here and there from those who have been before me. Heermann, Kennerly and Cooper, the principal observers besides Xantus, agree upon a trait that is extremely un-parine—I mean the wildness they attribute to the bird. Heermann speaks of certains actions, such as hanging back downward, which are tit-like, yet shared by many other small birds. Cooper alludes to habits "intermediate between those of Titmice and Warblers", a chickadee-like song, and a "triple lisping note like that of *tsée-tu-tu*". A sort of local migration has been noticed, though the birds reside in the Colorado Valley at least as high as Fort Mojave. Evidently we have much to learn of the Verdin, and much light upon its doubtful affinities to hope for, from thoughtful study of its habits, as well as from examination of those portions of its structure, no hint of which can be gained from inspection of stuffed specimens.

CHAPTER VII.—NUTHATCHES

FAM. SITTIDÆ

CHARS.—Bill subcylindrical, tapering, compressed, slender, acute, not notched, nearly or about as long as the head; culmen and commissure nearly straight; gonys long, convex, ascending. Nostrils rounded, concealed by tufts of bristly feathers (as in *Paridæ*). Wings long, pointed; primaries ten, the first of which is short or spurious. Tail much shorter than the wings, nearly even, of twelve soft, broad, not "scansorial" feathers. Tarsus shorter than the middle toe and claw, scutellate in front. Toes long, with large, strongly curved, compressed and acute claws, in adaptation to scansorial habits. Hallux with its claw about as long as the middle toe; the claw as long as the digit. Lateral toes of very unequal lengths. Plumage compact. Body stout, depressed. Tongue horny, acute, barbed. Habits highly scansorial; manner of climbing peculiar.

The Nuthatches are related to the Titmice, both in physical structure and general economy, but present certain peculiarities probably warranting the independent family rank I have assigned to them. The bill is altogether different; other details of structure are modified in adaptation to a particular kind of climbing, which, if not entirely peculiar to these birds, is at least their prime characteristic. Our other scansorial birds, such as the Creepers and Woodpeckers, use the tail as a prop or stay to assist in maintaining position; for which purpose the feathers are specially contrived by their rigidity and strength, being pressed against the support by the action of strong muscles. In the case of the Nuthatches, the tail does not assist in the acts of climbing. The birds just mentioned, moreover, never climb head downward; while the Nuthatches scramble about in every imaginable attitude, running down the trunks of trees, or along the under side of the branches, with the same ease with which they climb upward. When reversed in position, they are still unlike the Titmice and other small birds which momentarily hang suspended by their claws; for

they appear to "hug" the tree as closely as they do in any other posture. They are among the most nimble as well as adroit of creepers, matching any of our birds in activity and restless energy—a Woodpecker, for instance, is almost a sedate bird in comparison. Though not properly gregarious, they are sociable birds, and often gather in troops, with which Titmice, Kinglets and various Warblers may also mix. They are confined to woodland, and will be found oftener in high forests, on the larger trees, than in the undergrowth. In their relations to man, these birds are heedless and familiar, as if they trusted to his good will in return for the valuable services they render him in destroying incalculable numbers of noxious insects—a confidence too often abused by the vulgar and ignorant, who harbor against them the same prejudice that exists against the Sapsuckers (*Sphyrapicus*), the innocent and industrious Nuthatches being supposed to injure trees, when the fact is, they spend the whole of their laborious lives in man's service. Instances are known of some Nuthatches becoming so tame, when they are appreciated and properly treated, as to almost take food from the hand. The voice is harsh, abrupt and unmelodious—they have nothing to be called a song. Besides insects, they feed upon various hard fruits, such as nuts and acorns—whence, it is said, is derived the curious name "nuthatch", equivalent to "nut-pecker", and perhaps altered from "nut-hacker". The nidification resembles that of the typical Titmice; they nest in holes of trees, and lay numerous white, speckled eggs. The coloration is not bright. The sexes are similar, or nearly so; and the young, in the first full plumage, closely resemble the adults.

The genus *Sitta*, to which, as the leading representative of the family, the foregoing remarks apply more particularly, now comprises about fourteen species of Europe, Asia and North America. Australia has its peculiar genus *Sittella;* another, *Acanthisitta*, is confined to New Zealand; while a disputed Madagascan form, *Hypherpes*, is by some referred to this family. No South American representatives are known. The family is a rather small, as well as a somewhat isolated, group, comprising in all only some thirty species.

Genus SITTA Linnæus

CHARS. as above. Of the five North American species or varieties three occur in the Colorado Basin.

Slender-billed Nuthatch

Sitta carolinensis aculeata

Sitta carolinensis, *pt.*, of some authors.—*Towns.* Journ. Phila. Acad. viii. 1839, 155.—*Woodh.* Sitgr. Rep. 1853, 66.—*Newb.* PRRR. vi. 1857, 79.—(?) *Scl.* PZS. 1856, 293; 1858, 300; 1859, 363, 373 (all Mexican quotations).—(?) *Sumich.* Mem. Bost. Soc. i. 1869, 544 (Vera Cruz).

Sitta aculeata, *Cass.* Pr. Phila. Acad. viii. 1856, 254 (California).—*Scl.* PZS. 1857, 126.—*Bd.* BNA. 1858, 375; ed. of 1860, 375, pl. 33, f. 3.—*Kenn.* PRRR. x. 1859, Whipple's Route, 26, pl. 33, f. 3.—*Heerm.* PRRR. x. 1859, Williamson's Route, 56.—*Xant.* Pr. Phila. Acad. 1859, 191.—*C. & S.* NHWT. 1860, 193.—*Bd.* RAB. 1864, 86.—*Feilner,* Smiths. Rep. for 1864, 1865, 425.—*Coues,* Pr. Phila. Acad. 1866, 78.—*Brown,* Ibis, 2d ser. iv. 1868, 421 (Vancouver).—*Coop.* Am. Nat. iii. 1869, 74.—*Coop.* B. Cal. i. 1870, 54, figs.—*Aiken,* Pr. Bost. Soc. xv. 1872, 195.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 672, 713.—*Coop.* Am. Nat. viii. 1874, 17.

Sitta carolinensis *var.* **aculeata,** *Coues,* Key, 1872, 83.—*Allen,* Bull. MCZ. iii. 1872, 174.—*Ridg.* Bull. Essex Inst. v. 1873, 180.—*Allen,* Pr. Bost. Soc. 1874, 59.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 8.—*Hensh.* Rep. Orn. Specs. 1874, 40, 73, 100.—*Coues,* BNW. 1874, 24, 230.—*B. B. & R.* NAB. i. 1874, 117, fig. pl. 8, *with fig.* 2.—*Hensh.* Ann. List. B. Ariz. 1875, 155.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 173.

HAB.—Wooded regions of the Middle and Western Provinces of the United States, and portions of Mexico.

CH. SP.— ♂ ♀ *Cæruleo-plumbea, infrà alba, crisso rufo-notato, alis nigricantibus, cæruleo-plumbeo limbatis, rectricibus mediis dorso concoloribus, cæteris nigris, albo-notatis; rostro tenuissimo; ♂ pileo, nuchâ et cervice atris, ♀ pileo nigricante aut dorso concolore.*

♂, adult: Upper parts, central tail-feathers and much edging of the wings clear ashy-blue, the whole crown, nape and back of the neck glossy black. Under parts, including sides of the neck and head to above the eyes, dull white, more or less marked on the flanks and crissum with rusty-brown. Wings and their coverts blackish, much edged as already said, and with an oblique bar of white on the outer webs of the primaries towards their ends; concealed bases of primaries white; under wing-coverts mostly blackish; no bold bluish and black variegation of the innermost secondaries. Tail, excepting the two middle feathers, black; each feather marked with white in increasing amount, the outer web of the lateral feather being mostly white. Bill blackish-plumbeous, pale at the base below, extremely slender. Feet dark brown. Iris brown. Length, 5½-6 inches; extent, 10½-11; wing, 3¼; tail, 1¾; bill about ⅜ of an inch long, but only about ⅛ of an inch deep at the base.

♀: Similar to the ♂; but the black of the head imperfect, mixed or overlaid with the color of the back, or altogether restricted to the nape.

This form, extremely similar to the eastern *S. carolinensis*, differs in the slenderer bill, which is only ⅛-⅛ deep at the base, instead of ⅛-⅛, and in the indistinctness of the markings of the inner secondaries, which, in *S. carolinensis*, are boldly variegated with blackish and ashy-blue.

I HAVE never observed the slightest difference in habits between this species and its familiar eastern representative; other authors also agree that one is the counterpart of the

other. Sometimes I fancied the Slender-billed to be fonder of pine woods; but then I saw it chiefly in a country where the *Coniferæ* were the only extensive forests, and I knew that the common White-bellied inhabited pines just as frequently, considering the relative numbers of these and deciduous trees in most portions of the eastern United States. Mr. T. M. Trippe has spoken, in my "Birds of the Northwest", of what he considers a decided difference in the notes of the two birds:—"The common piping note is nearly the same, though in a different key; but the loud spring call is very different. It is far coarser, louder, and more rapid in *aculeata*—so loud and rattling, in fact, that I have mistaken it for the call of the Red-shafted Flicker—while there is none of the soft musical tone that marks the spring note of *S. carolinensis*." This observation, however, has not been corroborated by others; for Dr. Kennerly, in styling the note "peculiar", evidently refers to the generic character of the voice of Nuthatches, while Mr. Ridgway remarks that the notes "are much weaker and are uttered in a finer tone, some of them being, indeed, entirely different from those of *S. carolinensis*, though of the same general character". In this disagreement of the witnesses, I will not undertake to judge; but, in leaving the case open, I suspect that it has been somewhat "worked up".

I found the Slender-billed Nuthatches to be very common in the pineries about Fort Whipple, where they reside all the year; and the birds seem to be distributed throughout the wooded regions of the West, from the Rocky Mountains to the Pacific. The northern limit is not precisely determined; but it is doubtless near the boundary of the United States. In the mountains, the birds have been observed up to the limits of arboreal vegetation. They seem to descend from the more elevated regions in the autumn, but there is no regular migration. We know that the birds endure extreme cold with impunity, since they remain all winter about Colville, sometimes braving a temperature of —30° F.

I am not aware that the nests and eggs of this particular variety have been described; there is no reason to suppose they will be found to differ from those of *S. carolinensis*. The latter nests like a Titmouse—rather, like a Woodpecker, considering that it regularly digs a hole for itself, both sexes working assiduously till an excavation, it may be fifteen or twenty inches deep, is prepared for the reception of the nest.

This is a rather scanty lining of an indiscriminate mass of soft vegetable and animal substances. The eggs, to the number of five or six, measure on an average about four-fifths of an inch in length, and three-fifths in breadth. They are white, often with a rosy or creamy hue, speckled and blotched with reddish-brown and purplish or lavender shades, sometimes evenly and thickly over the whole surface, oftener chiefly about the larger end, where a wreath of the markings may be more or less perfectly formed.

Red-bellied Nuthatch

Sitta canadensis

Sitta canadensis, *L.* SN. i. 1766, 177, no. 2 (*Briss.* iii. 593, no. 2, pl. 29, f. 4).—*Bodd.* Tabl. PE. 1783, 38.—*Gm.* SN. i. 1788, 441, no. 2.—*Lath.* IO. i. 1790, 262, no. 2.—*Turt.* SN. i. 1806, 271.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 96.—*Nutt.* Man. i. 1832, 583.—*Aud.* OB. ii. 1834, 24, pl. 105.—*Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193 (Columbia River).—*Bp.* C. & GL. 1838, 10.—*Peab.* Rep. Orn. Mass. 1839, 339.—*Towns.* Journ. Phila. Acad. viii. 1839, 155.—*Aud.* Syn. 1839, 167.—*Nutt.* Man. 2d ed. i. 1840, 697.—*Aud.* BA. iv. 1842, 179, pl. 248.—*Gamb.* Pr. Phila. Acad. iii. 1846, 112 (California).—*Bp.* CA. i. 1850, 227.—*McCall,* Pr. Phila. Acad. v. 1851, 215 (Texas).—*Cabot,* Naum. ii. Hft. iii. 1852, 66 (Lake Superior).—*Hoy,* Pr. Phila. Acad. vi. 1853, 381 (Wisconsin).—*Thomps.* Vermont, 1853, 95.—*Read,* Pr. Phila. Acad. vi. 1853, 401 (Ohio).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 584.—*Henry,* Pr. Phila. Acad. vii. 1855, 313 (New Mexico).—*Putn.* Pr. Ess. Inst. i. 1856, 214.—*Kneel.* Pr. Bost. Soc. vi. 1857, 233.—*Bd.* BNA. 1858, 376.—*Willis,* Smiths. Rep. for 1858, 1859, 283 (Noya Scotia).—*Henry,* Pr. Phila. Acad. xi. 1859, 107 (New Mexico).—*Coop. & Suck.* NHWT. 1860, 193.—*Barn.* Smiths. Rep. for 1860, 1861, 437.—*Bd.* Ives's Rep. Col. R. pt. vi. 1861, 6 (Fort Yuma).—*Scl.* CAB. 1861, 15.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 411.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 164.—*Blak.* Ibis, 1862, 5 (Saskatchewan).—*Boardm.* Pr. Bost. Soc. ix. 1862, 126.—*Verr.* Pr. Bost. Soc. ix. 1862, 138 (Anticosti).—*Verr.* Pr. Ess. Inst. iii. 1862, 149.—*Blak.* Ibis, v. 1863, 67.—*Bd.* RAB. 1864, 87.—*Allen,* Pr. Ess. Inst. iv. 1864 69.—*Feilner,* Smiths. Rep. for 1864, 1865, 426 (California).—*Scl.* Ibis, 2d ser. i. 1865, 311.—*McIlwr.* Pr. Ess. Inst. v. 1866, 88.—*Coues,* Pr. Phila. Acad. xviii. 1866, 79 (Arizona).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*Brown,* Ibis, 2d. ser. iv. 1868, 421 (Vancouver).—*Coues,* Pr. Ess. Inst. v. 1868, 279.—*Coues,* Pr. Bost. Soc. xii. 1868, 107 (South Carolina).—*Coop.* Am. Nat. iii. 1869, 74.—*Allen,* Am. Nat. iii. 1869, 581.—*Turnb.* B. E. Pa. 1869, 28; Phila. ed. 21.—*Coop.* B. Cal. i. 1870, 54.—*Abbott,* Am. Nat. iv. 1870, 546.—*Trippe,* Pr. Ess. Inst. vi. 1871, 117.—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 464.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 359.—*Trippe,* Am. Nat. vi. 1872, 47.—*Coues,* Key, 1872, 83, f. 27.—*Hensh.* Rep. Orn. Specs. 1874, 73 (Colorado, breeding).—*Coues,* BNW. 1874. 25.—*B. B. & R.* NAB. i. 1874, 118, pl. 8, f. 7.—*Brew.* Pr. Bost. Soc. xvii. 1875, 438.—*Hensh.* List B. Ariz. 1875, 155.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 174.

FIG. 21.—Head of Canada Nuthatch.

Sitta varia, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 289 bis.—*Wils.* AO. i. 1808, 40, pl. 2, f. 4.—*Bp.* Journ. Phila. Acad. iv. 1824, 25, 275.

Sitta stulta, "*Vieill.*"

Sittelle de Canada, "*Buff.* x. 209"; "v. 471".

Torchepot du Canada, *Buff.* PE. 623, f. 2.

Canada Nuthatch, *Penn.* AZ. ii. 1785, 281, no. 170 (in part; the description and figure are those of *S. carolinensis*).—*Lath.* Syn. i. 1782, pt. 2, 651, no. 2.

Nuthatch du Canada, *Le Moine,* Ois. Canad. 1861, 237.

Canada Nuthatch, Red-bellied Nuthatch, *Vulg.*

HAB.—Wooded portions of temperate North America.

CH. SP.— ♂ ♀ *Plumbeo-cærulea, rectricibus mediis concoloribus, lateralibus nigris albo maculatis, alis extus innotatis; infrà ferruginea;* ♂ *vertice cum lateribus capitis nigris, strigâ frontali et superciliari albâ;* ♀ *pileo dorso concolore.*

♂, adult: Upper parts leaden-blue (brighter than in *S. carolinensis*), the central tail-feathers the same; wings fuscous, with slight ashy edgings and concealed white bases of the primaries. Entire under parts rusty-brown, very variable in shade, from rich fulvous to brownish-white, usually palest on the throat, deepest on the sides and crissum; tail-feathers, except the middle pair, black, the lateral marked with white. Whole top and sides of head and neck glossy black, that of the side appearing as a broad bar through the eye from bill to side of neck, cut off from that of the head by a long white superciliary stripe, which meets its fellow across the forehead. Bill dark plumbeous, paler below; feet plumbeous-brown. Length, 4½–4¾; extent, 8–8½; wing, 2⅜; tail, 1½; bill, ½.

♀: Crown like the back; lateral stripe on the head merely blackish. The under parts average paler than those of the ♂, but there is no constancy about this. Young birds resemble the ♀.

Pennant, in the "Arctic Zoology", makes a curious mistake in treating of the Canada and Black-headed Nuthatches. His first species, no. 170, called "Canada" Nuthatch, consists of the references to this species and the description of the other one, and the figure on plate 13 unmistakably represents *carolinensis;* while under his no. 171, called "Black-headed" Nuthatch, he describes *canadensis.* He correctly distinguishes the two species but inadvertently calls one the other.

OUR knowledge of the distribution and movements of the Canada Nuthatch lacks precision. As already said, it is known to inhabit wooded portions of temperate North America, from one ocean to the other, and from Florida, Texas and Arizona to Labrador and other portions of British America; but to what extent it is migratory within this large area, and in what portions it is resident, or a summer or winter visitor, we are still insufficiently informed. There appears to be little doubt that, unlike its relatives, it is decidedly migratory; yet authors are singularly at variance in their accounts of its movements. Wilson speaks of its leaving for the Southern States in October, and returning again in April. Brewer alludes to a flock which he saw in Massachusetts, May 20, which had "evidently just arrived from the South". But Allen states that it is chiefly a winter resident in Massachusetts, arriving in October and departing in April. In the District of Columbia, Coues and Prentiss say that it is a winter resident, from early in October until May. Ridgway found it in the mountains of Nevada in September and June. Such conflicting state-

ments might be multiplied; and my limited experience with the bird, which I have only seen during the colder part of the year, and only about Washington, simply forces me to an expression of opinion formed according to the balance of evidence. I judge that the bird is on the whole a more northerly species than the Carolina Nuthatch; that, unlike the other Nuthatches, the Titmice and the Creeper, all of which are imperfectly migratory, if not stationary, it migrates to a considerable extent in spring and fall. There appears, furthermore, to be an uncertain intermediate tract, in northerly portions of the United States, where some individuals at least are resident, and north of which the bird is only seen in summer, while further south it will only be found in winter, except at high elevations among the mountains of the West, where altitude answers for latitude. Its northern limit of distribution has been stated to be about latitude 66° N. In the West, it extends southward to the Mexican border, a specimen having been obtained at Fort Yuma by Lieut. J. C. Ives. I have observed no Mexican references, nor am I aware that the bird has ever been found south of the United States.

The rarity of the Canada Nuthatch in most of the Colorado Basin may be inferred from the infrequency of the original quotations referring to this section of the country—most writers, in fact, refer to the Yuma example just mentioned. I never saw it myself in any portion of New Mexico or Arizona, nor does Mr. Henshaw appear to have met with it in either of these Territories or in Utah. He gives us, however, an interesting record of its breeding in the pine woods about Fort Garland, Colorado, where he states it was by no means rare. The nest was found in a pine stump a few feet from the ground, excavated in the decayed wood to the depth of five inches, and lined with bits of bark; the eggs were five in number, in an advanced state of incubation. A nest which Audubon found in Maine as early as April 19, before the ice was all gone, was dug to a depth of about fourteen inches; it contained four eggs. The eggs I have examined in the Smithsonian collection are like those of the Carolina Nuthatch, but noticeably smaller, measuring about 0.60 x 0.48; they are white, sprinkled with reddish dots, sometimes pretty evenly distributed over the whole surface, sometimes chiefly wreathed about the larger end, or there confluent. The same general characters obtain in the eggs of other Nuthatches.

Pygmy Nuthatch

Sitta pygmæa

Sitta pygmæa, *Vig.* Zool. Voy. Blogs. 1839, 29, pl. 4. f. 2 (California).—*Bp.* C. & GL. 1838, 10.—*Aud.* OB. v. 1839, 63, pl. 415.—*Aud.* Syn. 1839, 168.—*Gamb.* Pr. Phila. Acad. iii. 1846, 112.—*Scl.* PZS. 1859, 363 (Xalapa).—*Coop. & Suck.* NHWT. 1860, 193.—*Bd.* Ives's Rep. Col. R. pt. vi. 1861, 6.—*Bd.* RAB. 1864, 88.—*Scl.* Ibis, 2d ser. i. 1865, 311.—*Feilner*, Smiths. Rep. for 1864, 1865, 426 (habits).—*Coues*, Pr. Phila. Acad. xviii. 1866 78 (Arizona).—*Brown*, Ibis, 2d ♀r. iv. 1868, 421 (Vancouver).—*Coop.* Am. Nat. iii. 1869, 74, 299.—*Sumich.* Mem. Bost. Soc. i. 1869, 544 (Vera Cruz).—*Coop.* B. Cal. i. 1870, 55, fig.—*Aiken*, Pr. Bost. Soc. xv. 1872, 195 (Colorado).—*Coues*, Key, 1872, 83.—*Coop.* Am. Nat. viii. 1874, 17.—*Coues*, BNW. 1874, 25, 230.—*B. B. & R.* NAB. i. 1874, 120, pl. 8.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 8.—*Yarr.* Rep. Orn. Specs. 1874, 34.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 175.

Sitta pygmea, *Aud.* BA. iv. 1842, 184, pl. 250.—*Woodh.* Sitgr. Rep. Zuñi R. 1853, 66.—*Henry*, Pr. Phila. Acad. vii. 1855, 313; xi. 1859, 107 (New Mexico).—*Newb.* PRRR. vi. 1859, 79.

Sitta pygmaea, *Bp.* CA. i. 1850, 227.—*Bd.* BNA. 1858, 378.—*Kennerly*, PRRR. x. 1859, Whipple's Route, 26.

Sitta pigmæa, *Coop.* Am. Nat. iv. 1871, 757.

Sitta pusilla *var.* **pygmæa**, *Allen*, Bull. MCZ. iii. 1872, 174 (Colorado).—*Ridg.* Bull. Essex Inst. v. 1873, 180 (Colorado).—*Hensh.* Rep. Orn. Specs. 1874, 40, 73, 100.

Pygmy Nuthatch, Californian Nuthatch, *Vulg.*

Hab.—United States from the Rocky Mountains to the Pacific. North to 49° (Vancouver, *Brown*). South in Mexico to Xalapa and Vera Cruz.

Ch. sp.— ♂ ♀ *Plumbeo-cærulea, pileo et nuchâ olivaceo-brunneis, lateraliter obscurioribus, maculâ albâ nuchali obsoletâ; rectricibus mediis dorso concoloribus, maculâ magnâ longitudinali albâ; infrà sordide alba, plus minusve rufescens, crisso lateribusque dorso vix discoloribus.*

♂ ♀: Upper parts ashy-blue, and wings with little or no markings (as in *canadensis*), though some of the outer primaries may be narrowly edged with white. Whole top of head, nape and back of neck, with the sides of the head to below the eyes, olive-brown, the lateral borders of this patch blackish, and an obsolete whitish patch at the back of the neck. Central tail-feathers like the back, but with a long white spot, and their outer webs black at the base; other tail-feathers blackish, with white marks, and often also tipped with the color of the back. Entire under parts ranging in different specimens from a mere muddy white to smoky-brown or rich rusty, nearly or quite as intense as in *S. canadensis;* the flanks and crissum shaded with a duller wash of the color of the back. Bill and feet dark plumbeous, the former paler at base below. Iris black. Length about 4 inches, or rather less; extent about 8; wing, 2¼; tail, 1½; tarsus, ⅝; bill about ½.

Young: Differs from the adult much as the ♀ of the foregoing species differs from the ♂, in having the top of the head like the back; the under parts are usually muddy-whitish, but there is great difference in this respect. The tail-feathers have constantly shown me the characteristic markings of the species.

While this species is indubitably very closely related to *S. pusilla* of the Southern States, it presents differences which I have not seen bridged over by intermediate examples. The color of the head is a pure hair-brown in *S. pusilla*, in which the white nuchal spot is large and distinct; and the central tail-feathers show little, if any, trace of the black and white markings so conspicuous in *S. pygmæa*.

HERE we have the most abundant, characteristic and generally distributed species of the family in the Colorado Basin. The bird was originally brought to the notice of naturalists by Mr. N. A. Vigors, who received it from Monterey, where it was collected during the voyage of the "Blossom", under command of Capt. F. W. Beechey, R. N., and described and figured it in the volume in which the zoological results of the expedition were made known, in 1839. A few years subsequently, Dr. Wm. Gambel spoke of its great abundance in certain portions of California; and most of the western explorers who followed in the wake of the sturdy pioneers of '49 have left memoranda of their observations. From the southwesterly regions where the species was first noticed, its known range has gradually extended to the east and north, till it now includes the whole of the United States from the Rocky Mountains to the Pacific. In Mexico, similarly, we have had advices of its presence; it has been recorded from Xalapa, and Sumichrast states that it is resident in Vera Cruz up to the limit of vegetation on the highest peaks. Though it is strictly the western representative of the Brown-headed Nuthatch, yet its range is much more extended; for the latter is almost entirely confined to the Southern Atlantic and Gulf States, only occasionally reaching as far north as Ohio.

Within the whole area of its dispersion, the Pygmy Nuthatch is resident, like most of its family and their allies. Some pass the winter as far north as latitude 49°, although, according to Mr. J. K. Lord, many proceed southward in November. I found it at all seasons about Fort Whipple; but in the pine forests of that elevated locality it is most abundant in summer. It seems to prefer the pines, especially during the breeding season, and ranges up the mountains to an altitude of 8 or 10,000 feet, or to the timber-line; at other times it is more generally distributed through the deciduous woods of lower levels. During my residence at Fort Whipple, the habits of these birds were to me a study which never failed to please. If I loitered in listless mood among the magnificent pines, "the world forgetting, by the world forgot," absorbed in the sensuous undercurrent

of merely animal existence, the vivacity of these ubiquitous little creatures seldom failed to break the spell of my dream, and bring me back to the realities that surrounded me. If I hurried breathless through the woods, in eager pursuit of some feathered prize that seemed likely to escape me, how did my haste in quest of a coveted thing differ from the bustling activity and restless energy they displayed in their search for what seemed good to them! The naturalist is never alone; solitude is not for him; he can call nothing his own—not even his thoughts, which he must be content to share with all the forms of life about him, and suffer to be carried beyond his control. "How singularly," I have said to myself, "how perfectly, do these busy troops of birds illustrate the waste of nervous force! Will they never learn to make haste slowly? Are they so full of energy that such incessant motion becomes a pleasure—a necessity? And after all, what does this eager scrambling amount to? They make a living by it, to be sure, and that is something; but so do some of the laziest people. Perhaps they like it; perhaps they cannot help it. *That* may be a flock of young birds, relishing their work with the zest of enthusiasts who have yet to learn the lesson that hard work teaches; *this* may be a lot of old ones, no longer buoyant, yet equally eager, for to them work has become a painful necessity, since habit has rendered idleness intolerable."

With such incessant activity as this do the Pygmy Nuthatches go about their daily avocations. With the appearance of the earlier broods the different families unite, and the busy throng roams through the woods, straggling from tree to tree with desultory flight, calling incessantly to each other as if to make sure that all the company keep together. They show some little preference in the matter of their hunting grounds, more rarely scrambling about the trunks than among the smaller branches of the trees, like the Brown-headed Nuthatches, which they resemble so closely in appearance, and they habitually resort to the terminal branchlets and foliage of the tree-tops. Their diet is a mixed one, consisting in part of the minute insects which lurk in the cracks of the bark, in part of the seeds of conifers, and doubtless other small hard fruits. Their sociability is a prominent trait; indeed, they may almost be called gregarious at all times excepting during the breeding season. Flocks of a dozen or twenty, and even up to fifty or a hundred, are not seldom seen; and in the same company numbers of Titmice and Warblers may often be found. They are extremely noisy

at such times—not clamorous in fretfulness or irritation, but with the jovial abandon of good fellowship. The notes are not susceptible of description, such is the endless variety of the queer chattering and whistling cries emitted, amidst which the peculiar *quank* of the larger Nuthatches finds no counterpart. Nor are they in themselves harmonious; yet the effect of the medley is pleasing.

The nest of the Pygmy Nuthatch I have never found; but the nidification is now well known to agree with that of its congeners, as far as the excavation of a hole is concerned. Accounts differ respecting the lining of the cavity; according to some the eggs are simply deposited upon the chips and dust at the bottom of the hole, while in other cases a tolerably well made and consistent nest of various soft vegetable and animal substances is constructed. Doubtless both these accounts are correct, their variance being chargeable to the birds themselves. It is probable that, in some localities at least, two broods are reared each season; in Arizona, I observed the earliest young on wing in June, which would leave ample time for a second family. The eggs are not distinguishable with certainty from those of the Canada Nuthatch, though said to be somewhat smaller and more pointed. They appear to have been first discovered at Fort Crook, California, by Captain (then Sergeant) John Feilner, U. S. A., who was not long afterward killed by Sioux in Dakota. In his notice of the species above quoted, he concludes with a graphic portrayal of a little scene which those who have watched the birds will recognize as true to nature. . . . "The pine nuts are very closely searched for their seeds; when found, it alights on a limb, where, holding it with one foot, it hammers with the bill until it has broken it in such parts as will enable it to eat the seed. If it should happen to one to drop such a seed, two or three will be seen diving after and catching it before it can reach the ground; another place will be found, and the hammering commences afresh. The scene presented by observing a party of these little birds all in a bustle and activity, engaged in breaking pine nuts, and to hear their chattering and hammering, reminds one of an immense machine shop, where all the mechanics are busily engaged in the various divisions of their craft."

CHAPTER VIII.—CREEPERS

FAM. CERTHIIDÆ

THIS is a small, well-defined group, of four or five genera and about a dozen species, usually divided into two subfamilies. One of these is the *Tichodrominæ*, represented by the European Wall Creeper, *Tichodroma muraria*, and some species of the chiefly Australian genus *Climacteris*. The other is the

SUBFAMILY CERTHIINÆ: TYPICAL CREEPERS

These are represented by the genus *Certhia*, and one or two others; they are confined to the Old World, with the exception of a single species of the typical

Genus CERTHIA Linnæus

CHARS.—Adaptation to scansorial habits by the structure of the tail and feet. Tail long and strong, formed of 12 rigid, acuminate feathers graduated in length; the shafts are stout, curved and elastic, the points extremely acute, and the whole structure of the feathers closely resembles that seen in the Woodpecker family. Tarsus scutellate, shorter than the middle toe and claw; anterior toes connate at base for the length of the 1st joint of the middle one. Lateral toes unequal in length, the inner being much shorter than the outer. Hind toe shorter than its claw. Claws strong, much curved, very sharp, the hinder one of great size; wing with 10 primaries, the first not half as long as the 2d, which is shorter than the 3d; point of the wing formed by the 3d–5th quills. Bill about as long as the head, extremely slender, acute, curved; nostrils exposed, narrow, scaled. No rictal vibrissæ.

FIG. 22.—Head, foot and tail-feather of the Creeper.

The general economy of the Creepers is peculiar. Their

habit of climbing is the most prominent trait; the action is precisely similar to that of the Woodpeckers, and quite unlike that of their much nearer relatives, the Nuthatches—for the Creepers never scramble about head downward, and never move without being propped up by the stiff, elastic tail, which is pressed against the support. The structure and grasping power of the feet are much the same as in the Nuthatches. The bill differs altogether from the stout, chisel-like instrument with which both Woodpeckers and Nuthatches bore into wood either to procure food or to construct a nesting-place, being weak, slender, curved and sharp-pointed. The mandibles may be likened to an extremely delicate pair of forceps, which may be insinuated into the narrowest crevices of the bark to pick out the most minute objects—and a very efficient tool it proves, as used by its skillful and indefatigable owner. The food of the Creepers consists chiefly of small insects; sometimes, it is said, they feed upon particles of vegetable matter, such as lichens or mosses. Their nidification is like that of the Nuthatches and typical Titmice, inasmuch as they nest in holes; but their weak bill is unfit for the labor of digging into wood, and they consequently occupy such natural excavations as they find in decayed wood, or the deserted homes of Woodpeckers and other animals. The eggs are numerous, white, speckled. The birds inhabit woodland, and seem to prefer trees of large size. They are not highly musical, and are generally considered songless; yet some close observers say they have heard a succession of modulated notes, by no means unmusical. In plumage, the sexes are alike, and the regular changes are not decided; while the variegated tints, harmonizing with the colors of the bark, are a great safeguard. The activity, or rather the industry, of the Creepers is a strong trait; yet they have none of the vivacity and turbulence of the Titmice and Nuthatches, being, in fact, very sedate and almost demure birds, gliding stealthily about the trees, and likely to elude observation unless narrowly watched. Our species is not regularly migratory. All the species of the genus resemble each other so closely that it is difficult to say how many there are; we have but one in the United States, believed to be identical with that of Europe; there is another species or variety in the warmer parts of America, and several are ascribed to Asia.

Brown Creeper

Certhia familiaris

(General references)

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Certhia hodgsoni, *Brooks,* "JASB. 1872, 73" (*fide* Dresser).

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Creeper, Tree Creeper, Brown Creeper, Common Creeper, American Creeper, *Vulg.*

var. *mexicana*

Certhia mexicana, "*Gloger.*"—*Reich.* "Hdbh. i. 1853, 265, pl. dlxii. f. 3841, 3842".—*Scl.* PZS. 1856, 290 (Ranchos de Suapam).—*Bd.* BNA. ed. of 1860, pl. 83, f. 2 (Mexico).—*Scl.* PZS. 1858, 297 (Parada).—*Scl.* PZS. 1859, 362 (Xalapa), 372 (Oaxaca).—*Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*Bd.* RAB. 1864, 90.—*Salv.* Ibis, 2d ser. ii. 1866, 190 (Guatemala).—*Sumich.* Mem. Bost. Soc. i. 1869, 544 (Vera Cruz).

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Certhia familiaris *var.* **mexicana,** *B. B. & R.* NAB. i. 1874, 128.

HAB.—Temperate North America, in wooded regions.

CH. SP.— ♂ ♀ *Fusca, albido striata, uropygio rufescente, infrà albida; alis albido variegatis, rufo albidoque bifasciatis.*

♂ ♀: Upper parts dark brown, changing to rusty-brown on the rump, everywhere streaked with ashy-white. This coloration descends to the sides of the head. An obscure whitish superciliary stripe. Under parts dull whitish, sometimes tinged with rusty on the flanks and crissum. Wing-coverts and quills tipped with white, the inner secondaries also with white shaft-lines, which, with the tips, contrast with the blackish of their outer webs. Wings also twice crossed with white or tawny-white, the anterior bar broad and occupying both webs of the feathers, the other only on the outer webs near their ends. Tail grayish-brown, immaculate, darker along the shaft, and at the ends of the feathers, sometimes showing obsolete transverse bars. Bill blackish above, mostly flesh-colored or yellowish below; feet brown. Length, 5¼–5⅝; extent, 7½–8; wing, 2½, more or less; tail usually a little longer than the wing, sometimes not so, 2½ to nearly 3 inches. ♀ averaging smaller than ♂.

Of late years, the American Creeper has been very generally separated from the European under the name of *C. americana;* but this term, which Bonaparte proposed in 1838, is anticipated by Professor Barton's *fusca* (1799), which is in turn antedated by Bartram's *rufa* (1791). It appears, however, that the bird is not fairly separable from *C. familiaris*; the various marks of distinction which have been adduced do not prove constant, and, more-

over, specimens from different parts of North America vary among themselves quite as much as some of them do from European examples. The length of the tail, by which it has been said *C. familiaris* is "at once separated", is a particularly variable feature, having a range of variation of nearly or about half an inch, and being sometimes shorter, though usually longer, than the tail. Its length depends in a degree upon the age and "wear" of the feathers, which are constantly pressed against the rough bark of trees. The shades of the several brown and rusty markings, particularly those of the rump and crissum, are likewise subject to much variation, not only with sex and age and locality, but as a matter of individual peculiarity. The best European authorities have united the several supposed species of their Creeper, and generally consider ours as not different. The var. *mexicana* appears to be better marked in its darker and richer coloration. This is a Central American and Mexican form, which has never been shown to occur in the United States, unless the Texas record above quoted invalidates this statement; for the several Californian references to *C.* "mexicana" really belong to the common form.

SOME insight into the Creepers' mode of life has been given in sketching the leading features of the genus; it remains to be more explicit respecting the particular species which inhabits the Colorado Valley as well as most other portions of North America. I am not aware that the northern limit of its distribution has been accurately determined. Dr. Brewer speaks of its extension "to high northern latitudes", yet the authors of the *Fauna Boreali-Americana* had nothing to say of the bird. The character of the arboreal vegetation probably determines its northerly dispersion, since it is strongly attached to woodland of large growth. But it is known to extend into the British Provinces: Newfoundland and Lake Winnepeg are two of the most northerly localities I find mentioned by writers in this connection. Its distribution in the United States is general in all suitable places; there are scarcely any of our faunistic lists of any considerable pretensions to completeness in which its name does not occur. Yet it does not appear to have been found in Florida by Allen, a circumstance corroborating Audubon's statement that in some portions of that State alone he had never observed it. It is a common inhabitant of suitable regions throughout the Colorado water-shed.

The leading trait of the Brown Creeper is its extraordinary industry—the "incomparable assiduity", as it has been well styled, with which it works for a living. Like all good workers, the Creeper makes no fuss about it, but just sticks to it. So quietly, yet with such celerity, does it go about its business that it scarcely seems to be at work, but rather to be rambling

in an aimless way about the trunks of trees, or at most only caring to see how fast it can scramble up to the top. During all this time, however, the bird is on the alert in the search for insects, which it extracts from their lurking places with such dexterity that its progress is scarcely arrested for a moment; and the numbers of these minute creatures yearly destroyed is simply incalculable. The Creeper is strongly attached to the trunks of large trees, being seldom seen foraging on even the larger branches; and it has a great fancy for traveling upward. These two traits combined result in its marked habit of beginning its curious search for insects near the bottom of a tree, and ascending with jerks in a straight or spiral line to the top. Then, if it likes the tree, and thinks it a good place to stay a while longer in, the bird launches itself into the air, and drops down on wing, to begin another ascent, in preference to scrambling down again, as a Woodpecker or Nuthatch would do. The easy, gliding motion with which it climbs has deceived one writer into stating that the Creeper does not hop along like a Woodpecker; but, in fact, the movement is exactly the same in both cases. One of the English writers (Barrington, Zool. 2d. ser. ix. p. 3998) describes, however, something peculiar in the position of the feet during the act of climbing:—These, he says, are not held parallel with each other, and near together, under the belly, but widely straddled, and thrown so far forward as to form with the end of the tail a surprisingly broad-based isosceles triangle. So nimble is the bird, and such a sly way has it of eluding observation by turning in the opposite direction to that in which a person moves to look after it, thus continually interposing the trunk of the tree in the line of vision, that it is no wonder the way it holds its feet long remained unascertained. Many things conspire to screen the queer little bird from any but the most patient and closest scrutiny during its ordinary avocations; and so nearly do its colors correspond with the tints of the bark that it is likely to be overlooked altogether. But its habits are so methodical and undeviating that when one has learned them there is no difficulty. If we see a Creeper alight at the base of a tree on the side away from us, we have only to stand still, and keep a sharp lookout for it higher up; in a few moments, its spiral twisting will bring it round to our side; the chief point is to look high enough up, for it is surprising how rapidly the bird ascends. It generally makes the whole journey before dropping on wing to the base

of the tree again, or making off to another; sometimes, however, the tree seems to be not to its liking, when, as if actuated by a sudden impulse, it abandons an unprofitable search, and flies to a more promising feeding ground.

In thinking about the extraordinary activity of many small birds, one is tempted to ask himself the question, Do they ever rest? Who ever saw a Creeper, Nuthatch, Titmouse or Goldcrest motionless for any considerable length of time? Very few, I suspect. In the present case of the Creeper, however, Audubon has left a note of his observation, showing that even this most indefatigable of insect-hunters requires its period of repose:—"I have observed it when satiated," he says, "remain still and silent as if asleep, and, as it were, glued to the bark, for nearly an hour at a time. But whether the bird was really asleep, or wished to elude us, is more than I can affirm, though I am inclined toward the latter supposition, because toward night it retires to a hole, where frequently as many as a whole brood repose together, as I have on several occasions witnessed." Mr. T. G. Gentry has noticed the same thing:—"On the outskirts of Philadelphia," he says, "stands a certain hollow birch-tree, which has afforded lodgings for a half-dozen individuals of this species for several successive winters. On the return of night, the birds will precipitate themselves into the cavity, and closely huddle *en masse*, until day-break."

The Creeper differs from most of its relations in having very little sociability; it seems to be too much occupied with its pressing affairs to have any time for social relaxations. Though it is often found with Nuthatches and Titmice, it seems that the association is not sought on its own part, but is rather the intrusion of the other birds, or the casual coming together of species whose resorts are similar. I think it is decidedly a shy and solitary bird. Audubon's remark, that the members of one family usually remain together until the following spring, is contrary to my experience; but it derives some probable support from Mr. Gentry's above-quoted observation. The birds that the Creeper is oftenest seen on the same tree with are probably the smaller species of Woodpecker, commonly called "sapsuckers". The infestation of particular trees by insects probably calls the two kinds of bird together in community of interest; though it is supposed by some that the wily little Creeper takes advantage of the superior ability of Woodpeckers to find insects, and follows in their wake to trees where it

may be sure of a feast. Yet its solitary habits are always conspicuous, and are exhibited by its choice, especially during the breeding season, of the depths of the forest for its home, and by the little attention it pays to other birds. At other seasons, however, it betrays more familiarity, and is occasionally seen in orchards, gardens, and lawns near dwelling-houses. The degree of shyness or timidity it shows in the presence of man, and of the pains it takes to elude observation, has been variously rated by authors. Dr. Brewer alludes to the current statement that the Creeper, on perceiving itself to be watched, moves to the opposite side of the trunk, as lacking foundation, and is inclined to the opinion that the bird's movements are not due to caution, but simply to restlessness, he having always found them unconscious or regardless of his presence. My experience goes to confirm this. While I do not mean to assert that a Creeper may not be frightened, and instinctively scuttle around the trunk, or fly away, I have often stood within a few feet of one of the birds, and watched its movements with perfect ease; the course of its cork-screw journey brought it into view as often as it was hidden, and the bird appeared all the while to consider me of no account whatever. Dr. Brewer's remark was made *à propos* of a statement supposed to be Dr. Kennerly's. The paragraph sounded very familiar to me, and I thought I had seen it before—in short, I find that Dr. K. copied the statement almost word for word from Nuttall, forgetting to use the customary quotation marks.

As already stated, the bird in nesting occupies natural cavities of the wood, or deserted Woodpeckers' holes, and similar retreats, in which is deposited a lining composed of grasses, lichens, or decayed wood, usually mingled with the hair of quadrupeds or the feathers of birds, the whole mass having little consistency. It appears to nest with equal readiness at different elevations, sometimes selecting a rotten stump close to the ground, at other times finding a hole at a considerable height. It is represented as a brave and devoted parent, regardless of its own danger when its nest is threatened. The eggs are stated to vary in number from five to eight or even nine. They resemble those of the Nuthatches and most Titmice in being white, sprinkled with reddish-brown dots, and others of purplish or neutral tint; the dots being rather sparingly distributed, though tending at times to wreathe about the larger end. The Creeper being a slender-bodied bird in com-

parison with its linear dimensions, the eggs appear rather small for its size, being about 0.55 in length by 0.44 in breadth.

The insectivorous diet of the Creeper is occasionally varied with vegetable substances. Audubon speaks of finding particles of lichens in its gizzard, and Mr. Gentry affirms that he has frequently seen the bird upon hemlock, spruce and birch trees, feeding upon the seeds which are contained in the cones of the two former, and upon the catkins of the latter. According to the same writer, the following insects have been identified among the contents of its stomach:—*Cratonychus cinereus*, *C. pertinax*, *Rhynchænus pinûs*, *Bostrichus pinûs*, *Platynus cupreipennis*, *Harpalus compar*, *Formica sanguinea* and *F. subterranea*. Ants appear to be a favorite article of its diet, and are devoured in such quantities that at times the body of the bird has been found to smell of these creatures.

The Creeper's musical ability is not conspicuous. I have never recognized its song, and most authors say nothing on this score. But it seems that, besides its well-known harsh call-note (more easily learned and recognized than described), it has "a very distinct and varied song". This observation seems to have been first made, in the case of the American bird, by Mr. William Brewster, of Cambridge, who states that he has heard the birds singing, in different parts of New England, from the middle of March to June. "Their notes are varied and warbling and somewhat confused; some of them are loud, powerful, and surpassingly sweet, others are more feeble and plaintive; their song usually ends with their accustomed cry, which may be represented by *crēē crēē-crē-ēp*." The same thing, however, had been noticed in the case of the European Creeper; its song during the pairing season being, according to Professor Newton, "loud and pleasing, though not often heard, and pitched in a high, shrill key". So it seems that this obscure, hard-working and very practical little bird has found time amidst its absorbing pursuits to cultivate some of the accomplishments.

CHAPTER IX.—WRENS

FAM. TROGLODYTIDÆ

THE composition of the Wren family at present generally accepted by naturalists is such that its strict definition scarcely becomes possible; for within its limits is embraced much variety of form, and some of its accredited members are with difficulty distinguished from those of certain other groups. Without attempting to frame an exact diagnosis, I can nevertheless point out those features by which the Wrens of this country at least may be recognized. The chief trouble lies in the direction of the Mocking group of Thrushes; Wrens being so very much like these birds that the arbitrary criterion of size is the most obvious distinction. From the *Mimin*æ, however, the *Troglodytid*æ are distinguished by the greater extent of the cohesion of the anterior toes at their bases:—"The inner toe is united by half its basal joint to the middle toe, sometimes by the whole of this joint; and the second joint of the outer toe enters wholly or partially into this union, instead of the basal only."—(BAIRD.) The possession of ten primaries separates the Wrens from all of the large sylvicoline group of birds; and the first primary, though short, is not spurious. The scutellate tarsi distinguish them from those groups, discussed in preceding chapters, which have the tarsi booted. In comparison with the Titmice and Nuthatches, we observe that in the Wrens the bill is altogether different, being of a slender, lengthened, and generally curved shape, showing exposed scaled nostrils. This member lacks obvious rictal bristles, though the frontal feathers may be bristle-tipped. The tail is variable, and without any special attribute, unless the erected position so frequently observed may be considered a characteristic. We thus arrive at some understanding of the nature of this group; and for the practical purpose of discriminating the species with which we have to deal, we may say they are 10-primaried *Oscines* of small size, with scutellate tarsi, short, rounded wings, not peculiar tail, slender, unnotched bill, with exposed scaled nostrils and no rictal vibrissæ, and extensively coherent toes—a

conventional expression which probably covers all the modifications of the North American species at least, to the exclusion of the birds of other families.

About a hundred species and geographical races of Wrens are usually recognized, and referred to some fifteen or twenty genera. Nearly all of them are American, and the great majority inhabit the warmer parts of this hemisphere. With the exception of certain aberrant forms, by some placed in this family, the group is only represented in the Old World by one or two species—the common Wood Wren of Europe, *Anorthura troglodytes*, analogue of our Winter Wren, and a closely related Japanese species, *A. fumigatus*, thought to be much the same as the Alaskan Wren lately described by Professor Baird. The habits and general economy of these birds vary to such a degree that only a few leading traits can be conveniently sketched. The Wrens habitually live near the ground, inhabiting shrubbery rather than trees, the reeds of swamps or marshes, the tangled brushwood of windfall country, patches of cactus, piles of rocks, &c. Although not at all scansorial in the proper sense, they have a good deal of the Creeper in their composition, and are incessantly rustling about in the intricate recesses of their chosen resorts, gliding with short flights or leaping impetuously. Such humility, and the evident desire for a means of ready concealment, even though not always taken advantage of, contrast curiously with some other traits the Wrens exhibit in an exaggerated degree, and result in a singular compound. For the Wrens possess a high rate of irritability—they are bold, self-asserting and aggressive, petulant to the verge of fretfulness, with a certain pertness of demeanor, and a singularly prying, inquisitive disposition. They are the irrepressible busy-bodies of feathered society, and not seldom make trouble among some of the milder-mannered and better-behaved members of the sylvan circle. They are noisy birds; when alarmed or displeased, they have a loud, harsh, chattering or scolding note; but they are also fine songsters. Every one is familiar with the bright hearty carol which the House Wren trills so persistently in the spring, and the song of other species is often of wonderful *timbre*. The nidification differs in detail with the several species; but it may be said, in general terms, that the Wrens build rude and bulky structures of coarse materials, sometimes stowed away in holes, beneath rocks, &c., in other cases hung in bushes or reeds. There is no constant

character of the eggs (of two closely related species, for example, the eggs are in one case white, in the other dark chocolate color); but the clutch is always numerous. The Wrens are all plainly colored birds, the browns and grays being the prevailing shades; none of our species, at least, and perhaps none of the family, show red, blue, yellow, or green. The dietetic regimen is insectivorous.

Species of this family abound in all parts of temperate North America, and one of them also attains the higher latitudes. Among them are some of the best known of our eastern birds; but in the West and Southwest there are several kinds, belonging to distinct genera, of which less is generally known. I shall take occasion to treat the latter with sufficient particularity to reflect all that has been learned of their life-history; but the more familiar species must be slighted to some extent, since the limits which have been set to the present work forbid the completion of biographies in every case.

Genus CAMPYLORHYNCHUS Spix

CHARS.—"Bill stout, compressed, as long as, or longer than the head, without notch or rictal bristles; culmen and commissure curved; gonys nearly straight. Nostrils in the antero-inferior part of nasal groove, in advance of the frontal feathers, with an overhanging scale with thickened edge, as in *Thryothorus;* sometimes, as in the type, reduced to a slight ridge along the upper side of the nasal groove. Lateral septum not projecting below or anteriorly into the nasal cavity, but concealed by the nasal scale. Tarsus a little longer than the middle toe and claw; claws strong, much curved, and very sharp: middle toe with the basal joint adherent almost throughout. Wings and tail about equal, the latter graduated; the exterior webs of lateral feathers broad. In size the largest of the family."—(BAIRD.) *Tarsi scutellate posteriorly.*

This notable genus consists of some twenty species, inhabiting Central and South America, with a single one extending into the United States. A second, found in Lower California, may possibly be hereafter included in our fauna; it is noted below.* These birds look quite unlike ordinary Wrens, our ideas of which require to be considerably enlarged to include the *Campylorhynchi.* They illustrate a peculiarity, shared by

* **Campylorhynchus affinis,** *Xant.* Pr. Phila. Acad. 1859, 298.—*Bd.* Pr. Phila. Acad. 1859 303.—*Bd.* Rev. AB. 1864, 100.—*Scl.* Cat. AB. 1861, 17.—*Elliot,* BNA. pl.—*Coop.* B. Cal. i. 1870, 62, fig.—*Coues,* Key, 1872, 85.—*B. B. & R.* NAB. i. 1874, 133, pl. 8, f. 6.

the other two western genera, *Catherpes* and *Salpinctes*, in comparison with the more typical *Troglodytes*. In the latter, the tail is *thin*, that is, the individual feathers are narrow; in the western forms, these feathers are broad and rounded, and the tail as a whole is consequently fan-shaped. As already stated, the species are of great size for this family, and their habits are in some respects peculiar.

Impressed with certain differences observable between typical Wrens and the three western genera, *Campylorhynchus*, *Salpinctes*, and *Catherpes*, generally assigned to the *Troglodytidæ*, I have been led to look into the technical aspects of the case, with the result of becoming dissatisfied with the alleged position of these forms among the Wrens. In establishing the genus *Catherpes* as distinct from *Salpinctes*, Professor Baird noted certain discrepancies in the structure of the feet; and in 1864 (Review, p. 109), he enlarges upon the remarkable structure of the tarsus of *Salpinctes*, which he characterizes as "especially peculiar among all its cognate genera by having the usual two continuous plates along the posterior half of the inner and outer faces of the tarsus divided transversely into seven or more smaller plates, with a naked interval between them and the anterior scutellæ". This is certainly a remarkable feature for a presumed thoroughly Oscine bird to exhibit, since it is highly characteristic of *Oscines* to have the postero-lateral tarsal plates continuous, meeting in a sharp ridge behind. I verify the state of the case in *Salpinctes* as given by Professor Baird, but I find, to my surprise, that in *Campylorhynchus* the lateral plates, but especially the outer one, are broken up into a series of conspicuous scutella; and that *Catherpes* shows a tendency, not so fully expressed, to similar division of the tarsal envelope. If this structure really possesses the significance attributed to it by many of the best writers, the question whether these birds are Wrens at all is re-opened. That they possess decidedly Wren-like habits is no strong argument, for nothing is more fallacious than such teleological bending of diverse structures to similar ends. It will be remembered that Lafresnaye, and other writers of repute, have placed species of *Campylorhynchus* in the genus *Picolaptes*, which is a member of the large family *Dendrocolaptidæ*; some of these birds have rigid acuminate *Certhia*-like tail-feathers, and Creeper-like habits; in others, however, the tail is soft, and among them is witnessed the greatest diversity of habits. On comparing our *Campylorhynchus* with a typical Dendrocolaptine (*Dendrornis erythropygia*), I find that the bills of the two are extremely similar, and that the tarsal envelope of *Dendrornis* is broken up posteriorly into a number of plates, of which those on the inner aspect are continuous with those in front, while the postero-exterior ones are a series of rounded and isolated scales. Again, in the case of *Salpinctes*, it will be recollected that Bonaparte placed it in the genus *Myiothera*, and considered it an Ant-thrush (*Formicariidæ*). On examining the tarsus of a species of *Thamnophilus*, a typical Formicarian, I find that the plates are divided behind, and the general structure is substantially the same as in *Salpinctes*. The case of *Catherpes* is less clear, but it would probably go with *Salpinctes*. These points may not suffice for the summary dismissal of the genera under consideration from the *Troglodytidæ*, but they go to show that their position in that family is not assured.

Cactus Wren

Campylorhynchus brunneicapillus

Picolaptes brunneicapillus, *Lafr.* "Mag. de Zool. 1835, 61, pl. 47" (?"California").—*Lawr.* Ann. Lyc. N. Y. v. 1852, 114 (Texas).—*Bd.* Stansbury's Rep. 1852, 327.—*Heerm.* Journ. Phila. Acad. ii. 1853, 263.—*Cass.* Ill. B. Cal. & Tex. 1854, 156, pl. 25.

Campylorhynchus brunneicapillus, *Gray,* G. of B. i. 1847, 159.—*Bp.* CA. i. 1850, 223.—*Scl.* Pr. Phila. Acad. viii. 1856, 264.—*Bd.* BNA. 1858, 355.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 13.—*Bd.* Proc. Phila. Acad. 1859, 304.—*Heerm.* PRRR. x. 1859, Williamson's Route, Birds, 41.—*Bd.* Rev. AB. i. 1864, 99.—*Dress.* Ibis, 1865, 483 (Texas).—*Coues,* Pr. Phila. Acad. 1866, 77 (Arizona); 1868, 83 (the same).—*Butcher,* Pr. Phila. Acad. 1868, 149 (Laredo, Tex.).—*Coop.* Am. Nat. iii. 1869, 183.—*Coop.* B. Cal. i. 1870, 61, figs.—*Coues,* Key, 1872, 85.—*Merr.* U. S. Geol. Surv. Ter. for 1872, 1873, 713 (Utah).—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 9.—*Hensh* Rep. Orn. Specs. 1874, 41, 100.—*B. B. & R.* NAB. i. 1874, 132, fig. pl. 8, f. 5.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 178 (Utah, &c.).

Camplorynchus brunneicapillus, *Hensh.* List B. Ariz. 1875, 155.

Brown-headed Creeper, *Cass.* l. c.

Californian Cactus-wren, *Coop.* l. c.

Cactus Wren, *B. B. & R.* l. c.

HAB.—Texas, New Mexico, Arizona, Southern Utah, Southern Nevada, and portions of California. Northern Mexico.

CH. SP.— ♂ ♀ *Griseo-fuscus, albo nigroque notatus, pileo obscurè brunneo, immaculato; infrà rufo-albus, posticè rufescens, gulâ maculis magnis rotundatis nigris, reliquis partibus punctis sparsis nigris; caudâ nigricante, rectrice externâ albo multifasciatâ, reliquis, mediis exceptis, albo unifasciatis.*

♂, adult: Back grayish-brown, marked with black and white, each feather having a central white field several times indented with black. Whole crown of head and nape rich dark wood-brown, immaculate. A long white superciliary stripe from nostril to nape. Beneath, nearly pure white anteriorly, gradually shading behind into decided cinnamon-brown—the throat and fore part of the breast marked with numerous large, crowded, rounded, black spots, the rest of the under parts with small, sparse, oval or linear, black spots, again enlarging somewhat on the crissum. Wings darker and more fuscous-brown than the back; all the quills with a series of numerous white or whitish indentations along the edge of both webs—largest and purest on the inner webs. Central tail-feathers like the wings, with numerous, more or less incomplete, blackish bars; other tail-feathers blackish, the outer with several broad white bars on both webs; the rest with usually only a single complete white bar near the end. Bill dark plumbeous, paler below; iris orange. Length, near 8 inches; wing, 3 or more; tail rather longer than the wing; bill, ⅞; tarsus, 1.

♀, adult: Quite like the ♂, but the spots on the throat and breast rather smaller, therefore less crowded, and less strongly contrasting with the sparse speckling of the rest of the under parts.

Young: A newly fledged specimen before me is very similar to the adult on the upper parts, but the throat is whitish with little speckling, and there are scarcely any spots on the rest of the under parts, which are, however, as decidedly cinnamon as those of the adults.

The points of difference between this species and the nearly allied though apparently quite distinct *C. affinis* of Lower California (which may yet be found in the Colorado Basin) are as follows: In *C. affinis*, the cap is reddish-brown, lighter instead of darker than the back. The marking of the back is very conspicuous, in strong streaks of black and white, these two colors bordering each other with little or no indentation. The under parts are nearly white, with smaller markings on the throat and larger ones elsewhere, so that these areas are scarcely contrasted in appearance. Lastly and chiefly, all the lateral tail-feathers, instead of only the outer ones, are crossed on both webs with numerous complete white bars. The variations with sex and age correspond with those of *C. brunneicapillus*.

THE history of the Brown-headed Cactus Wren begins in doubt whether it is the bird which the famous French ornithologist De Lafresnaye (or De La Fresnaye—it is written both ways by the Baron himself) described and figured in 1835 under the name of *Picolaptes brunneicapillus*. In critically reviewing the case, Professor Baird found it "quite impossible" to reconcile the ascribed characters of Lafresnaye's bird with the present species, and alludes to the chance that it may have come from Peru, instead of California, as was supposed. However, as the identification has been universally accepted, we are warranted in retaining it, in the absence of proof to the contrary. I almost wish that it may be shown to be necessary to change the name, which becomes most inconveniently long when associated with the generic term—in fact, I remember but one more cumbrous appellation for a North American bird. This is *Synthliborhamphus wurmizuzume*, a curious Greco-Japanese term, which was invented for one of the North Pacific species of the Auk family (*Alcidæ*), and for which Brandt, Temminck and myself are jointly responsible.

The English name which the "Cactus" Wren has acquired indicates the nature of its customary resorts, and affords a hint of its peculiar nidification. As we have already seen, several of the Arizona birds are architects of singular skill and taste; the Cactus Wren is one of them. In the most arid and desolate regions of the Southwest, where the cacti flourish with wonderful luxuriance, covering the impoverished tracts of volcanic *débris* with a kind of vegetation only less surly and forbidding than the very scoria, this Wren makes its home, and places its nests, on every hand, in the thorny embrace of the repulsive vegetation. True to the instincts and traditions of the Wren family, it builds a bulky and conspicuous domicile; and when many are breeding together, the structures become as noticeable

as the nests which a colony of Marsh Wrens build in the heart of the swaying reeds. But it is not a globular mass of material, nor yet a cup; it is like a purse or pouch, and also peculiar in its position; for such nests are usually pensile. In the present case, the nest resembles a flattened flask—more exactly, it is like the nursing-bottle, with which all mothers (and I suspect some fathers) are familiar, and this is laid horizontally, on its flat side, in the crotch of a cactus. It is constructed of grasses and small twigs woven or matted together, and lined with feathers. Including the covered way or neck of the bottle leading to the nest proper, the structure is some ten or twelve inches long, and rather more than half as much in breadth. The bird appears to be an early breeder; Dr. Cooper found it preparing to build nests about San Diego so early as the 26th of February. This, however, may have been somewhat exceptional; for the nests which the same naturalist actually examined in May contained eggs or newly-fledged young, and must, therefore, have been constructed in April. The eggs, from four to six in number, and an inch long by two-thirds as much in breadth, are white, but so thickly flecked with small salmon-colored spots that a rich cast of this tint is given to the whole surface.

The first naturalist to fully identify the species as a bird of the United States was Mr. George N. Lawrence, who examined specimens taken in Texas by Capt. J. P. McCown, in 1851. Soon afterward, it was noticed by Dr. A. L. Heermann in the vicinity of Guaymas; and that gentleman's observations upon its habits were published by the Philadelphia Academy, in its "Journal". In 1854, Mr. John Cassin gave a recognizable figure of the species, referring it, as others before him had, to the genus *Picolaptes*, and consequently placing it on his plate in a climbing attitude, which, however suitable for a *Picolaptes*, is not characteristic of a *Campylorhynchus*, as these birds have nothing substantially in common with the scansorial nature of the Creepers and Nuthatches. In the mean time, other observers successively contributed their quota to the general fund of our knowledge, gradually establishing the geographical distribution of the species I have given in a preceding paragraph, and affording further insight into its mode of life. Two of the latest items respecting its distribution, given by Mr. Henshaw in a work just now issuing from the Government press, are specially interesting, as they carry the

known range into Utah and Nevada: the bird was taken in 1871 by Mr. Ferdinand Bischoff in the last named Territory, and by Dr. H. C. Yarrow and Mr. Henshaw at Saint George, Utah, during the following year. All our accounts agree substantially respecting the thoroughly Wren-like nature of the bird. Its motions are sprightly and varied; its temperament is curiously compounded of self-assertion, petulance, inquisitiveness, and timidity; now it skulks in the shelter of the impenetrable cactus patches and other dense undergrowth, now mounts the tops of the bushes to scold in a loud, harsh tone, or to utter the notes of its clear and ringing song.

Genus SALPINCTES Cabanis

CHARS.—Bill about as long as the head, slender, compressed, straight at base, then lightly decurved, acute at tip, faintly notched. Nostrils conspicuous, scaled, in a large fossa. Wing longer than the tail, the exposed portion of the first primary about half as long as the second, which is decidedly shorter than the third. Tail rounded, of twelve broad plane feathers, with rounded or subtruncate ends. Feet small and weak; tarsus longer than the middle toe, *scutellate posteriorly*. Hind toe and claw shorter than the middle one. Lateral toes of unequal lengths, the outer being the longest; both very short, the tips of their claws falling short of the base of the middle claw.

The special structure of the tarsal envelope, in connection with the small size of the feet and peculiar relative proportions of the tarsus and the several toes, readily distinguishes this genus among its allies. It is represented, as far as now known, by a single species; though a different variety has lately been ascertained to occur on the island of Guadaloup, off the coast of Lower California.

Rock Wren

Salpinctes obsoletus

Troglodytes obsoletus, *Say*, Long's Exp. R. Mts. ii. 1823, 4.—*Aud.* OB. iv. 1838, 443, pl. 360, f. 4.—*Aud.* Syn. 1839, 73.—*Aud.* BA. ii. 1841, 113, pl. 116.—*Woodh.* Sitgr. Rep. Zuñi, 1853, 66.—*Heerm.* Journ. Phila. Acad. ii. 1853, 263.—*Henry*, Pr. Phila. Acad. 1855, 309 (New Mexico).—*Newb.* PRRR. vi. 1857, 80.—*Heerm.* PRRR. x. 1859, 41.

Mylothera obsoleta, *Bp.* AO. i. 1825, 6, pl. 1. f. 2.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 73.—*Towns.* Journ. Phila. Acad. 1839, 154.

Troglodytes obsoleta, *Nutt.* Man. i. 1832, 435.

Troglodites obsoletus, *Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193.

Thryothorus obsoletus, *Bp.* CGL. 1838, 11.—*Bp.* "Rev. Zool. ii. 1839, 98".

Salpinctes obsoletus, *Cab.* Arch. f. Naturg. 1847, Bd. i. 323 (type).—*Bp.* CA. i. 1850, 224.—*Bd.* BNA. 1858, 357.—*Bd.* U. S. Mex. B. Surv. ii pt. ii. 1859, Birds, 13.—*Henry,* Pr. Phila. Acad. 1859, 107 (New Mexico).—*Scl.* PZS. 1859, 371 (Oaxaca).—*Xant.* Pr. Phila. Acad. 1859, 191 (California).—*S. & S.* Ibis, 1860, 30 (Vera Paz).—*Bd.* Ives's Exped. pt. v. 1861, 6 (Colorado River.)—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 463.—*Bd.* Rev. AB. i. 1864, 110.—*Coues,* Ibis, 1865, 164 (Arizona).—*Coues,* Pr. Phila. Acad. 1866, 77 (Arizona).—*Coues,* Pr. Phila. Acad. 1868, 83 (Arizona).—*Butch.* Pr. Phila. Acad. 1868, 149 (Texas).—*Brown,* Ibis, 1868, 421 (Vancouver).—*Coop.* Am. Nat. iii. 1869, 73, 183, 297 (Upper Missouri).—*Coop.* B. Cal. i. 1870, 64, fig.—*Coop.* Pr. Cal. Acad. 1870, 75 (Colorado River).—*Coues,* Key, 1872, 85.—*Allen.* Bull. MCZ. iii. 1872, 174.—*Hold.* Pr. Bost. Soc. xv. 1872, 195 (Black Hills).—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 673.—*Trippe,* Pr. Bost. Soc. xv. 1873, 236 (Decatur County, Iowa).—*Ridg.* Bull. Ess. Inst. v. 1873 180 (Colorado).—*Trippe,* Am. Nat. vii. 1873, 566 (the same).—*Allen,* Am. Nat. vii. 1873, 363.—*Ridg.* Am. Nat. vii. 1873, 605.—*Allen,* Pr. Bost. Soc. xvii. 1874, 50 (Yellowstone River).—*Coues,* BNW. 1874, 27, 230.—*Bd. Br. & Ry.* NAB. i. 1874, 135, figs. pl. 8, f. 3.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 8.—*Hensh.* Rep. Orn. Specs. 1874, 41, 100.—*Nelson,* Pr. Bost. Soc. xvii. 1875, 353 (Nevada).—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 179.

Salpinctus obsoletus, *Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 464.

Salpinctes obsoletus, *Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713.

Thryothorus latifasciatus, "*Licht* Preis-Verz. 1831, no. 82?"

Rocky Mountain Wren, Rock Wren, *Authors.*

HAB.—Western United States and Mexico. South to Guatemala.

CH. SP.— ♂ ♀ *Fusco-griseus, nigro et albido punctatus, obsoletè fusco-undulatus, uropygio rufescente; subtus albidus posticè rufescens, gulâ obsoletè fusco-striatâ; rectricibus mediis dorso concoloribus, fusco-striatis, lateralibus fulvis, nigro-fasciatis.*

♂ ♀, adult: Upper parts pale brownish-gray, minutely dotted everywhere with blackish and whitish points together, and usually showing obsolete wavy bars of dusky. Rump cinnamon-brown; a whitish superciliary line; beneath, soiled white, shading behind into pale cinnamon, the throat and breast obsoletely streaked, and the under tail-coverts barred, with dusky. Quills of the wings rather darker than the back, with similar markings on the outer webs. Middle tail-feathers like the back, with many dark bars of equal width with the lighter ones; lateral tail-feathers similarly marked on the outer webs, plain on the inner webs, with a broad subterminal black bar on both webs and cinnamon-brown tips, the latter usually marbled with dusky; outer feather with several blackish and cinnamon bars on both webs. Bill and feet dark horn color, the former paler at base below. Length, 5½–6; wing, 2⅜–2⅝; tail, 2⅛–2⅜; bill, ⅜–⅝; tarsus, ¾–⅞.

Most of the markings of this species are blended and diffuse. The shade of the upper parts is quite variable, from dull grayish to a more plumbeous shade, often with a faint pinkish tinge. Specimens in worn and faded plumage may altogether fail to show the peculiar dotting with black and whitish usually seen; but, in these, the crosswise dusky undulation, as well as the streaks on the breast, are commonly more distinct than in fresher-feathered examples. The rufous tinge of the under parts is very variable in shade; that of the rump, however, is always well marked.

STATEMENTS to the effect that the Rock Wren does not occur on the Pacific side have no foundation in fact. In

the "History of North American Birds" (1874), it is said to be "not recorded from Pacific slope"; but one such record, of date 1868, is above-quoted. The current eastward limitation of its range must likewise be extended, since the bird has been found in Iowa. Yet authors are right in regarding it as more especially or chiefly an inhabitant of the great central plateau and Rocky Mountains at large to the Coast ranges; and I am not aware that it has ever been found on the coast of Upper California or Oregon, though it is said by Dr. Cooper to appear toward the Sacramento Valley. It gains the coast further south, and extends to Cape Saint Lucas. Its northern limit is close by the boundary of the United States (latitude 49°). In the other direction, the matter is less definite. I give a Mexican quotation in a preceding paragraph, and we have the excellent authority of Mr. Osbert Salvin for the occurrence of the bird in Guatemala. Of the movements of the bird within the general area of its distribution, I am not prepared to speak with desirable precision. It is migratory; but the northern limit of its wintering, and the southern limit of its summering, I think remain to be ascertained. It appears to breed at large in its United States range. At Fort Whipple I noticed its arrival during the latter part of April, and it remains there at least until April. At Fort Mojave, lower in the Territory, though near the same latitude, its presence has been noted in February, and the inference is that it winters there. It has been found at Toquerville, Utah, after the middle of October. Some of its movements may be further illustrated by the following notes of Mr. T. M. Trippe, extracted from the "Birds of the Northwest":—

"The Rock Wren arrives at Idaho [Springs, Clear Creek County, Colorado,] about the 20th of May, and extends its range up to, and a little above, timber-line. It breeds most abundantly between 6,500 and 9,500 feet, rarely nesting higher than the latter elevation, though found during summer from 12,000 feet down to the plains. It is a constant resident of the piles of loose rock which lie scattered on the mountain-sides, in which it finds its food and rears its young, and to which it retreats for safety on being alarmed. On its first arrival it is rather shy, but soon becomes tame and even familiar, haunting piles of boulders and small stones in the placer diggings, close to the miners' cabins. It rarely ventures far from its favorite rocky retreats; but occasionally visits the road-sides to pick up flies and other

insects, and sometimes hops over the roofs of cabins and mills, and not infrequently chooses the ridge as a convenient place from which to serenade its mate. It has a curious, rapidly repeated note, that sounds like the whirring of wings; its song is very beautiful, louder and sweeter than that of the House Wren, though not as varied. While singing, the bird usually perches on the top of a heap of stones, and stands erect, with head thrown up, like the Carolina Wren. At such times it is quite timid, and if alarmed, instantly ceases the song and looks anxiously around, bobbing itself up and down every little while, like the Dipper, and presently creeps down into the stone-heap. Late in autumn its feathers become much worn from constant creeping among the rocks. In September it disappears."

The Rock Wren abounds in suitable situations throughout the Colorado Basin, where its vivacious behavior and loud notes render it conspicuous among the other smaller plainly clad species. It is found in most situations, whether wooded or open, but evidently prefers rocky places, full of chinks and crannies, where it creeps furtively about like a mouse, only with greater agility, or skips and flutters from stone to stone. The greater portion of its *habitat* being still unsettled, the bird thus frequenting wild and desolate places has acquired a reputation for shyness and love of seclusion; but there is every reason to suppose that in the course of time, should the country ever grow populous, it will become as familiar as the House Wren. In the West, Parkman's Wren, which is nothing but a variety of the sociable little *aëdon*, continues to be quite as retiring and solitary a bird as the Rock Wren. In the case of the latter, we already have the premonitory signs of the semi-domestication of which the bird is susceptible; it often comes about the miner's or the squatter's cabin, even building its nest in the chinks of the logs; and with equal readiness haunts the shrubbery of gardens in many of the western towns. It would make a very desirable addition to our "household birds".

The materials which compose the Rock Wren's nest are very miscellaneous—some general term like "rubbish" would best express the state of the case. Sometimes a nest is found to be composed almost entirely of some single substance that happened readily available; but it is oftener built of a variety of materials—any that come handy—sticks, bark-strips, weeds, grasses, moss, hair, wool, &c. The sites selected are quite as

various; usually the nest is built in a rift of rocks, or on the ground beneath some shelving rock. The variety of the Rock Wren which inhabits the island of Guadaloup, off the coast of Lower California, is said to ingeniously block up the entrance to its nest with an artificial wall built of pebbles, leaving an aperture only just large enough to pass. A nest has been found in the natural cavity of a clay bank; and others, as already hinted, between the logs of a cabin. As to the period of laying, we are again met by great diversity, in consequence of the wide range of the bird during the breeding season. Dr. Cooper's Fort Benton nest contained nine eggs, in June; at San Diego, the same naturalist found young birds in May; in New Mexico, Mr. Henshaw took a nest containing three young and one egg, June 17; and another, with four nearly fledged young, was secured July 28, though birds of the year already flying had been observed two weeks previously. This indicates, of course, that at least two broods are reared; and such is doubtless the rule, in the southerly localities at any rate. The eggs seem to run from four to eight or nine to a clutch; they measure from 0.72 to 0.77 in length by 0.60 to 0.66 in breadth, averaging about $\frac{3}{4} \times \frac{5}{8}$; they are noticeable for their rotundity, and the crystalline purity and smoothness of the shell. The white ground is rather sparingly sprinkled with distinct reddish-brown dots, usually massed at the large end or wreathed around it.

Genus CATHERPES Baird

CHARS.—In general features, even to the system of coloration, and the tints themselves, closely resembling *Salpinctes*. Tail and wings much as in that genus. Bill singularly attenuate, about as long as the head, nearly straight in all its outlines, even the gonys being scarcely appreciably, and the culmen and gonys only slightly, deflected toward the end. There appears to be some peculiarity in the direction of the axis of the bill as a whole in comparison with that of the rest of the skull, there being little rise of the forehead from the line of the culmen. Tarsus short, not exceeding the middle toe and claw, with a tendency to subdivision of the tarsal plates behind. Hind toe and claw as long as the middle one. Lateral toes of unequal lengths, the tip of the claw of the outer one reaching, or rather surpassing, the base of the middle claw.

As in the case of *Salpinctes*, this genus possesses but one known species, which is separable into two geographical races.

Cañon Wren

Catherpes mexicanus* conspersus

Troglodytes albifrons, *Bd.* Stansbury's Rep. 1852, 327.

Troglodytes mexicanus, *Heerm.* Journ. Phila. Acad. 1853, 263.—*Cass.* Ill. B. Cal. & Tex. 1854, 173, pl. 30 (in part).

Catherpes mexicanus, *Bd.* BNA. 1858, 356 (in part).—*Kenner.* PRRR. x. 1859, 26.—*Xant.* Pr. Phila. Acad. 1859, 191 (California).—*Bd.* Rev. AB. i. 1864, 111 (in part).—*Dress*, Ibis, 1865, 484 (Texas).—*Coues*, Pr. Phila. Acad. 1866, 77 (Arizona).—*Coop.* B. Cal. i. 1870, 66, figs.—*Aiken*, Pr. Bost. Soc. xv. 1872, 196 (Colorado, resident).—*Allen*, Bull. MCZ. 1872, 175 (Colorado City).—*Allen*, Am. Nat. vi. 1872, 404.—*Coues*, Key, 1872, 85.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713 (Utah).—*Coop.* Am. Nat. viii. 1874, 17.—*Coues*, BNW. 1874, 28.

Catherpes mexicanus *var.* **conspersus**, *Ridgw.* Am. Nat. vii. 1873, 603.—*Ridg.* Bull. Ess. Inst. v. 1873, 180 (Colorado).—*Bd. Br. & Ry.* NAB. i. 1874, 139, fig. pl. 8, f. 4.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 9.—*Hensh.* Rep. Orn. Specs. 1874, 41, 101.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 181.

White-throated Wren, **White-throated Rock Wren**, **Cañon Wren**, *Authors.*

HAB.—Throughout New Mexico and Arizona, and portions of Texas, Colorado, Utah, Nevada, and California. Resident.

CH. SP.— ♂ ♀ *Brunneus, anticè pallescens, posticè rufescens, undique albido nigroque punctatus; caudâ cinnamominâ, angustissimè nigrofasciatâ; gulâ albâ; ventre ferrugineo, obsoletè albido fuscoque notato; pedibus nigris.*

♂ ♀, adult: Upper parts brown, paler and grayer anteriorly, behind shading insensibly into rich rufous, everywhere dotted with small dusky and whitish spots. Tail clear cinnamon-brown, crossed with numerous very narrow and mostly zigzag black bars. Wing-quills dark brown, the outer webs of the primaries and both webs of the inner secondaries barred with the color of the back. Chin, throat, and fore breast, with the lower half of the side of the head and neck, white, shading behind through ochraceous-brown into rich deep ferruginous, and posteriorly obsoletely waved with dusky and whitish. Bill slate color, of a pale livid hue below; feet black;

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* The synonymy of the true *mexicanus* is:—

Thryothorus mexicanus, *Sw.* Zool. Ill. i. 1829, pl. 11.

Troglodytes mexicanus, *Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 57.—*Gray*, G. of B. i. 1847, 159.

Salpinctes mexicanus, *Cab.* Wieg. Arch. 1847, Bd. i. 324.—*Bp.* CA. i. 1850, 224.—*Cab.* MH. i. 1850, 78.—*Scl.* PZS. 1855, 66; 1857, 212 (Orizaba); 1858, 29 (Oaxaca).—*Scl.* Cat. AB. 1861, 18.

Catherpes mexicanus, *Scl.* PZS. 1864, 172 (City of Mexico).—*Sumich.* Mem. Bost. Soc. i. 1869, 545 (Vera Cruz).

Catherpes mexicanus *var.* **mexicanus**, *Ridg.* Am. Nat. vii. 1873, 603.—*Bd. Br. Ry.* NAB. i. 1874, 138.

Thryothorus guttulatus, *Lafr.* RZ. 1839, 99.

? Troglodytes albicollis, "*Cuv.*"

? Troglodytes murarius, *Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 57.

? Certhia albifrons, *Giraud*, Sixteen Sp. Tex. B. 1841, pl. 8 (see *Ridg.* Am. Nat. vii. 1873, 604).

HAB.—Mexico, southward from near the border of the United States.

eyes brown. Length about 5¼ inches; extent, 7½; wing, 2½; tail, 2⅛; bill, ⅘; tarsus, ⅞.

The numerous United States specimens of this bird I have examined differ decidedly from the Mexican form, as accurately pointed out by Mr. Ridgway. The Mexican bird is larger, with a different curve of the bill; it is much darker colored both above and below, with sharper distinction of the white throat, and with the spots of the upper parts restricted to the back and wings; with the black tail-bars much broader and more regular, and the light markings on the outer webs of the quills mere indentations instead of complete bars.

POINTS about the Cañon Wren are its fondness for the resorts the name indicates, and its wonderfully impressive chant. More anon of the last of these two leading traits. I will first speak of its haunts, which are no less characteristic of the bird than its singular utterances. It is not very long since the bird was unknown as an inhabitant of the United States; and no one could have surmised how large an area in this country it really occupies from the hints of its distribution which our literature of ten years ago afforded. It was supposed to merely reach our border, with a little extension within our limits up the Colorado Valley. The fact that I had never seen it at Fort Whipple supported this notion of its limited distribution, and in my "Prodrome" of 1866 I gave the bird as one generally distributed over the southern and western portions of Arizona, up to Fort Mojave at least. I now see that its absence from that locality—at any rate, its rarity, so great that it never came under my observation—was due to the topographical features of the place, not its geographical position. There were plenty of rocks about the fort (rocks, like reptiles and cactuses, are natural products of Arizona), just suiting the wants of the *Salpinctes;* but this immediate vicinity lacked the singular walled chasms with which many portions of the Territory are scored and seamed—those reproductions on a smaller scale of the Grand Cañon of the Colorado itself, most wonderful crack of the ground in America—and such rifts of solid rock alone are entirely to the liking of the Cañon Wren. So it fell out that it was left for the latest ornithologists of the Southwest—for Allen, Aiken, Ridgway, and Henshaw—to show that the range of the bird extends from Arizona and New Mexico, and portions of Texas and Southern California, into Colorado, Utah, and Nevada. How much further it may actually reach we do not yet know; but there is nothing in the analogies of the case to forbid the supposition that the

Cañon Wren may push northward wherever its favorite resorts can be found. For it is by no means the tender, semi-tropical bird we may have somewhat unconsciously supposed; it is resident in all the Territories just named; it *winters* in Colorado, Utah, and Nevada; and if it is ever subjected to the migratory impulses which most of the Wrens feel at times, there is nothing but the lack of suitable haunts to restrain its movements.

We remember the "rift within the lute"; in the Cañon Wren we have the lute within the rift—a curious little animated music-box, utterly insignificant in size and appearance, yet fit to make the welkin ring with glee. This bird-note is one of the most characteristic sounds in nature; nothing matches it exactly; and its power to impress the hearer increases when, as usually happens, the volume of the sound is strengthened by reverberation through the deep and sinuous cañon, echoed from side to side of the massive perpendicular walls till it gradually dies away in the distance. No technical description would be likely to express the character of these notes, nor explain the indelible impression they make upon one who hears them for the first time amid the wild and desolate scenes to which they are a fit accompaniment. The song is perfectly simple; it is merely a succession of single whistling notes, each separate and distinct, beginning as high in the scale as the bird can reach, and regularly descending the gamut as long as the bird's breath holds out, or until it reaches the lowest note the bird is capable of striking. These notes are loud, clear, and of a peculiarly resonant quality; they are uttered with startling emphasis, and I sometimes fancied I detected a shade of derision, as if, secure in its own rocky fastnesses, the bird were disposed to mock the discomforts and anxieties of a journey through hostile deserts.

In its general habits, the Cañon Wren displays much of the nature of a Creeper; and, on closely comparing the structure of its feet, much resemblance may be traced. In fact, its habits recall the impression I have formed respecting those of the European Wall Creeper (*Tichodroma*). It often flies up and down the face of perpendicular cliffs, clinging to the slightest inequalities of surface, or settling to sing upon the very edge of the crest; and has even been observed to cling to the roof of a cave with all the facility of a Creeper. When among loose bowlders, its behavior is more becoming a Wren; it threads the mazes of the rocks, like the *Salpinctes*, with wonderful agility,

in a sly and furtive way, delighting to baffle observation and re-appear unexpectedly in another place to laugh heartily at the perplexity it has occasioned. But I must not represent the Cañon Wren solely in its leading character of the scoffing anchoretic cave-dweller; it sometimes displays familiar traits, coming in friendly spirit about man's abode, to nest in crevices of walls and buildings, or even occupy boxes put up for its accommodation, like a Martin, Bluebird, or House Wren. Sufficient and satisfactory details respecting its nest and eggs have not yet reached me; from what I can gather from the published records, its economy in these matters closely resembles that of the Rock Wren. Eggs supposed to belong to the Cañon Wren have been described by Dr. Brewer; they were "four in number, were unusually oblong and pointed for eggs of this family, and measured .80 by .60 of an inch, with a crystalline-white ground, profusely covered with numerous and large blotches of a reddish or cinnamon brown".

Subfamily TROGLODYTINÆ: Typical Wrens

This is a much more homogeneous group than the family at large as usually constituted. The current genera of North America are very closely related—so closely that their formal discrimination becomes difficult. They are in fact best distinguished by the system of coloration, in connection with certain slight details of form. Since every one of our species represents a different subdivision, it will suffice to present here an analysis which will serve for their recognition, and obviate the necessity of diagnosis under the several heads given beyond.

All the following sections with the wings and tail more or less completely barred crosswise.

A. Large. Upper parts uniform in color, without streaks or bars; rump with concealed white spots. Belly unmarked; a conspicuous superciliary stripe.

a. Tail shorter or not longer than the wings, all the feathers brown, distinctly barred ..... Thryothorus (*T. ludovicianus*).

b. Tail decidedly longer than the wings (in our species), blackish, not fully barred on all the feathers ..... Thryomanes (*T. bewicki*).

B. Small. Upper parts not uniform, the back being more or less distinctly barred crosswise; wings, tail, and flanks fully barred.

c. Tail about equal to wings, the outstretched feet reaching scarcely or not beyond its end ..... Troglodytes (*T. aëdon*).

d. Tail decidedly shorter than wings, the outstretched feet reaching far beyond its end ..... Anorthura (*A. troglodytes*).

C. Small. Upper parts not uniform, the back being streaked lengthwise; flanks scarcely or not barred.

e. Bill about $\frac{2}{3}$ as long as head; crown plain; streaks of back confined to interscapular region ..... TELMATODYTES (*T. palustris*).

f. Bill scarcely or nor $\frac{1}{2}$ as long as head; crown streaked, like the whole back ..... CISTOTHORUS (*C. stellaris*).

Species of all these sections, excepting typical *Thryothorus*, occur in the Colorado Basin. The synonymy of *Thryothorus ludovicianus** is subjoined, together with a figure of the same

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***Thryothorus ludovicianus.—Carolina Wren.**

a. ludovicianus.

Motacilla troglodytes, var. γ, *Gm.* SN. i. pt. ii. 1788, 994, no. 46γ (Buff. v. 361; PE. 730, f. 1).

Sylvia ludoviciana, *Lath.* IO. ii. 1790, 548, n. 150 (also based on Buffon). (*Not of* p. 535, no. 105).

Motacilla ludovisiana, *Turt.* SN. i. 1806, 613.

Troglodytes ludovicianus, "*Licht.* Verz. 1823, 35".—*Bp.* Journ. Phila. Acad. iv. 1824, 29.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 93.—*Nutt.* Man. i. 1832, 429.—*Aud.* OB. i. 1831, 399, pl. 78.—*Aud.* Syn. 1839, 74.—*Aud.* BA. ii. 1841, 116, pl. 117.—*Giraud,* BLI. 1844, 75.—*Woodh.* Sitgr. Rep. 1853, 67.—*Gerhardt,* Naum. iii. 1853, 37.—*Hoy,* Pr. Phila. Acad. 1853, 313 (Wisconsin).—*Read,* Pr. Phila. Acad. 1853, 399 (Ohio).—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Pratten,* Tr. Ill. Agric. Soc. i. 1855, 603.—*Maxim.* J. f. O. 1858, 110.—*Gosse,* Alabama, 1859, 83.—*Hoy,* Smiths. Rep. for 1864, 1865, 438 (Missouri).—*Mayn.* B. Fla. 1873, 37.

Thryothorus ludovicianus, *Bp.* CGL. 1838, 11.—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Scl.* Cat. AB. 1861, 20.—*Barnard,* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 410.—*Bd.* Rev. AB. 1864, 123.—*? Dress.* Ibis, 1865, 484.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283 (Long Island).—*Coues,* Pr. Bost. Soc. xii. 1868, 108.—*Allen,* Mem. Bost. Soc. i. 1868, 523.—*Turnb.* B. E. Pa. 1869, 27; Phila. ed. 20 (wintering).—*Coues,* Pr. Phila. Acad. 1871, 19.—*Coues,* Am. Nat. 1871, 367.—*Allen,* Bull. MCZ. ii. 1871, 266; iii. 1872, 125, 175 (Kansas).—*Allen,* Am. Nat. vi. 1872, 265.—*Scott,* Pr. Bost. Soc. xv. 1872, 221.—*Coues,* Key, 1872, 86, f. 29.—*Snow,* B. Kansas, 1873, 6.—*Allen,* Am. Nat. vii. 1873, 363.—*Ridg.* Am. Nat. vii. 1873, 550, 605; viii. 1874, 198.—*Merriam,* Am. Nat. viii. 1874, 8, 86.—*Coues,* BNW. 1874, 29.

Thryothorus ludovicianus *var.* **ludovicianus,** *Bd. Br. & Ry.* NAB. i. 1874, 142, pl. 9, f. 1.

Thriothorus ludovicianus, *Bd.* BNA. 1858, 361.

Thryotorus ludovicianus, *Bp.* CA. i. 1850, 220.

Motacilla caroliniana, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 291.

Certhia caroliniana, *Wils.* AO. ii. 1810, 61, pl. 12, f. 5.—*Bp.* Journ. Phila. Acad. iv. 1824, 28.

Troglodytes arundinaceus, *Vieill.* OAS. ii. 1807, 55, pl. 108 (not the account of habits).

Thryothorus arundinaceus, "*Less.* RZ. 1840, 263 (syn. excl.)".

Thryothorus littoralis, *Vieill.* "Nouv. Dict. d'Hist. Nat. xxxiv. 1819, 56".

Thryothorus louisianæ, "*Less.* RZ. 1840, 263" (in part).

Troglodyte de la Louisiane, *Buff.* "v. 361"; (PE. 730, f. 1).—*Bodd.* Tabl. PE. 1783, 46.

Roitelet de la Louisiane, *Buff.* PE. 730, f. 1.

Louisiana Warbler, *Lath.* Syn. Suppl. ii. 244, n. 16 (*not of* Syn. ii, pt. ii. 480, no. 101).

Troglodyte des Roseaux, *Vieill.* (1807 *nec* 1819).

Carolina Wren, Great Carolina Wren, *Authors.*

b. berlandieri.

Thriothorus berlandieri, *Couch,* MSS.—*Bd.* BNA. 1858, 362; ed. of 1860, pl. 83, f. 1.

Thryothorus berlandieri, *Bd.* Rev. AB. 1864, 124.—*Coues,* Am. Nat. v. 1871, 367.

Thryothorus ludovicianus *var.* **berlandieri,** *Coues,* Key, 1872, 86.—*Coues,* BNW. 1874, 29.—*Bd. Br. & Ry.* NAB. i. 1874, 144, pl. 9, f. 2.

HAB.—Eastern United States; north to New York. Var. *berlandieri,* Valley of the Rio Grande.

bird, to complete an enumeration of the North American species. My notices of the species must be brief, and restricted chiefly to local items, since ample details of these well known birds have already been published in other treatises.

FIG. 23.—Carolina Wren.

White-bellied Wren

Thryomanes bewicki leucogaster

a. bewicki.

Troglodytes bewickii, *Aud.* OB. i. 1831, 96, pl. 18.—*Nutt.* Man. i. 1832, 434; 2d. ed. i. 1840, 489.—*Aud.* Syn. 1839, 74.—*Less.* RZ. 1840, 264.—*Aud.* BA. ii. 1841, 120, pl. 118.—*Woodh.* Sitgr. Rep. 1853, 67 (Indian Territory).—*Trippe,* Pr. Ess. Inst. vi. 1871, 115 (Minnesota).

Thryothorus bewickii, *Butch.* Pr. Phila. Acad. 1868, 149.—*Coues,* Pr. Bost. Soc. xii. 1868, 108.—*Turnb.* B. E. Pa. 1869, 27; Phila. ed. 20.—*Coues,* Key, 1872, 86.—*Ridg.* Am. Nat. vii. 1873, 605.—*Snow,* B. Kans. 1873, 6.—*Coues,* BNW. 1874, 31.

Thryothorus bewickii *var.* **bewickii,** *Bd.* Rev. AB. i. 1864, 126 (subg. *Thryomanes*).—*B. B. & R.* NAB. i. 1874, 145, figs. pl. 9, f. 3.

Thriothorus bewickii, *Bd.* BNA. 1858, 363.—*Barnard,* Smiths. Rep. for 1860, 1861, 436.

Thryothorus bewicki, *Bp.* CGL. 1838, 11.—*Dress.* Ibis, 1865, 484 (Texas).

Thryotorus bewicki, *Bp.* CA. i. 1850, 221.

Telmatodytes bewicki, *Cab.* MH. i. 1850, 78.

Bewick's Wren, Long-tailed House Wren, *Authors.*

b. leucogaster. (*Bd.*)

Thryothorus bewickii, *? Scl.* PZS. 1859, 372 (Oaxaca).—*Coues.* Pr. Phila. Acad. 1866, 78 (Arizona).—*Hensh.* Rep. Orn. Specs. 1874, 101 (Arizona).

Thryothorus bewicki, *Coues,* Ibis, 1865, 164 (Arizona).

Thryothorus bewickii *var.* **leucogaster,** *Bd.* Rev. AB. i. 1864, 127 (not *Trog. leucogastra Gould,* PZS. 1836, 89, which is of a different genus).—*Coues,* Key, 1872. 86.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 9.—*Hensh.* ibid. 41.—*B. B. & R.* NAB. i. 1874, 147.

Thryothorus bewickii *b.* **leucogaster,** *Coues,* BNW. 1874, 31.

Thryothorus bewicki *var.* **leucogaster,** *Hensh.* List B. Ariz. 1875, 155; Expl. W. 100 M. 183.

Thriothorus leucogaster, *Coop.* Am. Nat. iii. 1869, 474, 479.

White-bellied Wren, *Authors.*

c. spilurus.

Troglodites bewickii, *Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193.

Troglodytes bewickii, *Towns.* Journ. Phila. Acad. 1839, 154.—*Gamb.* Pr. Phila. Acad. iii. 1846, 113.—*Newb.* PRRR. vi. 1857, 80.—*? Xant.* Pr. Phila. Acad. 1859, 191 (Fort Tejon).—*Heerm.* PRRR. x. 1859, 40.—*C. & S.* NHWT. 1869, 189.

Thryothorus bewickii, *Brown,* Ibis, 1868, 421 (Vancouver).

Thryothorus bewickii *var.* **spilurus,** *Bd.* Rev. AB. i. 1864, 126.—*Coues,* Key, 1872, 86.—*B. B. & R.* NAB. i. 1874, 147.—*Nels.* Pr. Bost. Soc. xvii. 1875, 357.

Thryothorus bewickii *c.* **spilurus,** *Coues,* BNW. 1874, 31.

Troglodytes spilurus, *Vig.* Zool. Voy. Bloss. 1839, 18, pl. 4. f. 1.—*Bp.* CA. i. 1850, 222.

Thryothorus spilurus, *Coop.* B. Cal. i. 1870, 69, fig.

HAB.—Eastern United States, north to the Middle States and Minnesota. Var. *leucogaster,* Southwestern United States and southward in Mexico. Var. *spilurus,* Pacific coast of the United States and Lower California.

CH. SP.— ♂ ♀ *Cinereo-brunneus, infrà cinereo-albus; strigâ superciliari albâ; caudâ nigricante, rectricibus mediis cinereo-multifasciatis, cæteris albo-terminatis, pogonio exteriore rectricis extimæ albo-fasciato.*

♂ ♀, adult: Above uniform clear ashy-brown. Below clear ashy-white, pure white on the middle parts. A long, strong, white, superciliary stripe from the nostrils to the sides of the nape, and auriculars speckled with white. A number of concealed white spots on the rump, which only show on disturbing the plumage. Quills of the wings fuscous, the inner feathers very obsoletely waved with the color of the back. Two middle tail-feathers closely and regularly barred with pure dark ash and black; the others black, with irregular white or ashy-white tips, the outer web of the exterior feather barred with white. Length, 5½–5¾ inches; extent, 6¾; wing, 2–2⅛; tail, 2¼–2½; bill, ½; tarsus, ¾.

This is the best marked of the races currently quoted, in the clearer ashy-brown of the upper parts, white shaded with pure ash rather than with brown on the under parts, obsoleteness of the transverse marking on the inner secondaries, abundance and size of the concealed white spots on the rump, and length of the tail. The Pacific coast form (*T. spilurus* Vig.), which shares this length of tail, has the bill even longer (about ⅔) and the browner coloration of typical *bewicki*; the spots on the rump are as numerous as in the Coloradoan form.

A technical point affecting nomenclature here requires passing notice. This bird is not *Troglodytes leucogastra* of Gould, as supposed by Professor Baird, Gould's bird being the same that was afterward described as *Cyphorinus pusillus* by Dr. Sclater (P. Z. S. 1859, 372), and consequently not even of the same genus. The *Cyphorinus* would consequently stand as *C. leucogaster* (Gould), and the *Thryomanes* remain *T. bewicki leucogaster* (Baird, 1864). See Ibis, 1874, p. —, where the point is elucidated by Mr. Salvin. In the "*Nomenclator Avium Neotropicalium*" (p. 155), Gould's bird is made the type of a new genus and called *Uropsila leucogastra.*

BEWICK'S Wren, of the White-bellied variety, is a common bird in the Colorado Basin. At Fort Whipple, I found it to be the most abundant and characteristic representative of its family; it resides there during the whole year, and seems as indifferent in its choice of resorts as it is in regard to the changes of the seasons. There is no occasion to enlarge upon its habits, since they are substantially the same as those of its eastern relative, which have already been sufficiently described by other writers besides myself. What I regard as probably the best account we have is that contributed by Mr. Ridgway to the "History of North American Birds". My "Birds of the Northwest" contains some additional information.

Western House Wren

Troglodytes domesticus parkmani

a. domesticus

Motacilla domestica, *Bartr.* Trav. Fla. 1st Am. ed. i. 1791, 291.

Sylvia domestica, *Wils.* AO. i. 1808, 129, pl. 8, f. 3.—*Bp.* Journ. Phila. Acad. iv. 1824, 187.

Troglodytes domestica, *Coues,* Pr. Phila. Acad. 1875, 351.

Troglodytes ædon, *Vieill,* OAS. ii. 1807, 52, pl. 107; "Nouv. Dict. xxxiv. 1819, 506".—*Bp.* Journ. Phila. Acad. iv. 1824, 187.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 92.—*Aud.* OB. i. 427; v. 470; pl. 83.—*Bp.* CGL. 1838, 11.—*Aud.* Syn. 1839, 75.—*Aud.* BA. ii. 1841, 125, pl. 120.—*Hoy,* Pr. Phila. Acad. 1853, 312.—*Thomps.* NH. Vermont, 1853, 84.—*Woodh.* Sitg. Rep. Zuñi, 1853, 67.—*Wailes,* Rep. Mississ. 1854, 318.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 583.—*Pratten,* ibid. 603.—*Putn.* Pr. Ess. Inst. i. 1856, 208.—*Haym.* Pr. Phila. Acad. 1856, 288.—*Barn.* Smiths. Rep. for 1860, 1861, 437.—*Verr.* Pr. Ess. Inst. iii. 1862, 149.—*Bd,* Rev. AB. 1864, 138.—*Hoy,* Smiths. Rep. for 1864, 1865, 438.—*McIlw.* Pr. Ess. Inst. v. 1866, 88.—*Coues,* Pr. Bost. Soc. xii. 1868, 108.—*Hill,* Am. Nat. iii. 1869, 49.—*Naum.* Am. Nat. iii. 1869, 390.—*McLaugh.* Am. Nat. iii. 1869, 614.—*Abbott,* Am. Nat. iv. 1870, 540, 545.—*Trippe,* Pr. Ess. Inst. vi. 1871, 115.—*Trippe,* Pr. Bost. Soc. xv. 1873, 236.—*Ridg.* Am. Nat. vii. 1873, 550.—*B. B. & R.* NAB. i. 1874, 149, pl. 9, f. 5.

Troglodytes aedon, *Peab.* Rep. Orn. Mass. 1839, 314.—*Nutt.* Man. i. 2d ed. 1840, 475.—*Bp.* CA. i. 1850, 222.—*Gerh.* Naum. iii. 1853, 37.—*Read,* Pr. Phila. Acad. vi. 1853, 399.—*Bd.* BNA. 1858, 367.—*Maxim.* J. f. O. 1858, 109.—*Allen,* Pr. Ess. Inst. iv. 1864, 68.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*Coues,* Pr. Ess. Inst. v. 1868, 278.—*Turnb.* B. E. Pa. 1869, 27; Phila. ed. 20.—*Coues,* Key, 1872, 86.—*Allen,* Bull. MCZ. ii. 1871, 265.—*Allen,* Am. Nat. vi. 1872, 265, 270, 275.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 360.—*Allen,* Am. Nat. 1873, 362.—*Mayn.* B. Fla. 1873, 39.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Coues,* BNW. 1874, 32.

Hylemathrous aedon, *Cab.* J. f. O. 1860, 407.

Troglodytes fulvus, *Nutt.* Man. i. 1832, 422.

Troglodytes furvus, *Rich.* "List, 1837, 11".—*Gloger,* J. f. O. 1854, 376.

Troglodytes americanus, *Aud.* OB. ii. 1834, 452, pl. 179.—*Bp.* CGL. 1838, 11.—*Peab.* Rep. Orn. Mass. 1839, 316.—*Aud.* Syn. 1839, 75.—*Aud.* BA. ii. 1841, 123, pl. 119.—*Bp.* CA. i. 1850, 222.—*Putn.* Pr. Essex Inst. i. 1856, 208.—*Bd.* BNA. 1858, 368.—*Verr.* Pr. Ess. Inst. iii. 1862, 149.—*Bd.* Rev. AB. 1864, 141.—*Lawr.* Ann Lyc. N. Y. viii. 1866, 283.—*Coues,* Pr. Ess. Inst. v. 1868, 278.—*Turnb.* B. E. Pa. 1869, 27; Phila. ed. 20.

Troglodytes americana, *Brew.* Journ. Bost. Soc. 1837, 437.

Traglodytes americanus, *Thomps.* N. H. Vermont, 1853, 85.

Hylemathrous americanus, *Cab.* J. f. O. 1860, 407.

Troglodyte æd n, *V.* l. c. 1807.—*LeM.* Ois. Canad. 1861, 182.

House Wren, *Authors.*

b. parkmani

Troglodites fulvus, *Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193.
Troglodytes fulvus, *Towns.* Journ. Phila. Acad. viii. 1839, 154.
Troglodytes parkmanii, *Aud.* OB. v. 1839, 310.—*Aud.* Syn. 1839, 75.—*Towns.* Journ. Phila. Acad. 1839, 154.—*Nutt.* Man. i. 2d ed. 1840, 483.—*Aud.* BA. ii. 1841, 133, pl. 122.
Troglodytes parkmanni, *Bp.* CA. i. 1850, 222.—*Bd.* BNA. 1858, 367.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, 13.—*Xant.* Pr. Phila. Acad. 1859, 191.—*C. & S.* NHWT. 1860, 191.—*Bd.* Ives's Rep. pt. v. 1861, 6.—*Blakist.* Ibis, iv. 1862, 5 (Saskatchewan); 1863, 67.—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 164.—*Bd.* Rev. AB. 1864, 140.—*Coues,* Ibis, 1865, 164.—*Coues,* Pr. Phila. Acad. 1866, 78.—*Brown,* Ibis, 1868, 421.—*Corp.* B. Cal. i. 1870, 71, fig.—*Coop.* Pr. Cala. Acad. 1870, 75.—*Coop.* Am. Nat. iv. 1871, 758.—*Allen,* Am. Nat. vi. 1872, 275.—*Merr.* U. S. Geol. Surv. 1873, 673, 713.—*Ridg.* Am. Nat. viii. 1874, 200.
Troglodytes parkmani, *Aiken,* Pr. Bost. Soc. xv. 1872, 196.
Troglodytes parkmannii, *Stev.* U. S. Geol. Surv. for 1870, 1871, 464.
Troglodytes ædon, *S. & R.* FBA. ii. 1831, 316, fig. (Rocky Mountains).
Troglodytes aedon, *Heerm.* PRRR. x. 1859, 41.—*Holden,* Pr. Bost. Soc. xv. 1872, 196.
Troglodytes ædon *var.* **parkmanni,** *Coues,* Key, 1872, 87.—*Ridg.* Bull. Ess. Inst. v. 1873, 180.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 8.—*B. B. & R.* NAB. i. 1874, 153.—*Allen* Pr. Bost. Soc. xvii. 1874, 50.—*Nelson,* Pr. Bost. Soc. xvii. 1875, 357.
Troglodytes aedon *var.* **parkmanni,** *Coues,* BNW. 1874, 32.—*Hensh.* Rep. Orn. Specs. 1874, 41, 57, 74, 101.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 184.
Troglodytes aedon *var.* **parkmani,** *Allen,* Am. Nat. vii. 1873, 362.—*Trippe* apud *Coues,* BNW. 1874. 231.—*Hensh.* List B. Ariz. 1875, 155.
Troglodytes sylvestris, *Gamb.* Pr. Phila. Acad. iii. 1846, 113.
Troglodytes americanus, *Gamb.* Journ. Phila. Acad. i. 1847, 33.—*Heerm.* Journ. Phila. Acad. ii. 1853, 263.—*Henry,* Pr. Phila. Acad. vii. 1855, 309; xi. 1859, 107.—*Heerm.* PRRR. x. 1859, 41.
Parkman's or **Parkmann's Wren, Western House Wren,** *Authors.*

HAB.—Of the typical form, Eastern United States and British Provinces; west to Dakota, Nebraska, Kansas, &c. Of var. *parkmani,* United States from the high central plains to the Pacific.

CH. SP. (*b.* PARKMANI).— ♂ ♀ *Brunneus, uropygio vix discolore, notæo, alis caudâque fusco transfasciatis; infrà brunneo-albidus, abdomine albicante, hypochondriis crissoque fasciatis. Staturâ T. aëdonis, sed alis caudâque longioribus.*

♂ ♀: Brown above, little brighter on the rump, nearly everywhere waved with dusky, strongest on the wings and tail, but usually very appreciable on the whole back as well. Below brownish-white, becoming nearly pure white on the belly, obscurely variegated with darker markings, which, on the flanks and crissum, become stronger bars, alternating with brown and whitish ones. Bill blackish above, pale below; feet brown. Length, 5 inches or a little more; extent, 6¾; wing, 2 or rather more; tail almost 2.

With a very close resemblance to typical *aëdon,* this form differs appreciably in some points of form as well as of color. The wings and tail are decidedly longer, and this elongation of the wing results in a different relative proportion of the first primary, the exposed portion of which in *aëdon* is about half as long as the longest primary, while the same in *parkmani* is only about half as long as the second primary. The Colorado region furnishes extreme cases of this difference, as it also does of the paleness of color which characterizes the western style of House Wren. The bird has a faded appearance in comparison with typical *aëdon,* and the brownish of the rump is little different from that of the back.

I derive my name of the typical House Wren, *T. domesticus*, as Wilson did his *Sylvia domestica*, from the *Motacilla domestica* of Bartram, which antedates Vieillot's name by many years. The current orthography of the latter (*œdon*) is clearly wrong, since it is fro ἀηδων (th. ἀειδω), whence properly *aëdon*. Nor has the varietal designation of the Western House Wren escaped maltreatment, being spelled four different ways. The bird having been dedicated to Dr. George Parkman (not Parkmann) of Boston, its name should be written *parkmani*. The various combinations of these two words in their several shapes result in a curiously involved set of synonyms, which show that the care to be expected from an author in the use of technical terms in science is not always exercised. I am free to speak in the matter, having been myself quite as guilty as the rest.

Respecting the relationships of Audubon's "Wood Wren", *T. americanus*, to the common House Wren, there seems to be no longer a doubt that the two are identical. The authors of the "History of North American Birds", while agreeing in this view, differ in their explanation of the ascribed characters of the "Wood Wren". At page 149 of the work just mentioned, we read:—"There can scarcely be any doubt that the *T. americanus* of Audubon is nothing more than this species [*T. aëdon*] in dark, accidentally soiled plumage (from charcoal of burnt trees, etc.)." At pages 151 and 152 of the same work, the following statement occurs:—"Under the name of *Troglodytes americanus*, or Wood Wren, Mr. Audubon figured and described as a distinct species what is probably only a somewhat larger and darker form of the present species [*T. aëdon*], hardly distinct enough to be treated even as a race." A specimen which came to me as a "Wood Wren", under color of Audubon's personal identification, and which I retain in my cabinet, is nothing but a House Wren.

Before proceeding to speak of Parkman's Wren, I wish to correct an important error into which Dr. Brewer has fallen respecting the distribution of the common House Wren, which, he states (op. cit. p. 150), "is not observed in any portion of the United States after the first of November". But Audubon found his "Wood Wren" in South Carolina in winter; the House Wren is marked "probably resident" in my List of the Birds of South Carolina; and Mr. Allen found it one of the abundant winter birds of Florida, "occurring everywhere". The fact is that the South Atlantic and Gulf States are exactly the winter home of the House Wren; there may be some extralimital records, indeed, but I am afraid to quote any of the supposed references, as I have not satisfied myself that the bird ever winters anywhere but in the region where Dr. Brewer states it is never seen in winter. The same writer says further:—"This species does not appear to be found beyond the southwestern portion of Maine and the southern portions of New Hampshire and Vermont." I understand that confirmation of its alleged extension to Nova Scotia would be desirable, but of its appearance in Canada there is no reasonable doubt. In the interior, it also extends to the British Possessions. I have myself found it breeding abundantly on the Red River of the North, latitude 49° N.

IN comparing the habits of Parkman's Wren with those of its eastern relative, we must not regard the matter from the standpoint usually assumed. Being familiar with the ways of

the semi-domesticated House Wren, we unconsciously consider the traits it has acquired in populous regions, and the consequent modification of its habits, to be natural, and are apt to contrast our bird's somewhat artificial mode of life with the primitive manner in which the other still lives. Making due allowance for this, we find that the alleged discrepancies between the two birds have little foundation in fact. Nor have circumstances altered the case to the extent some suppose; for the behavior of these Wrens is still the same when they are placed under similar conditions. Parkman's Wren accepts the situation as soon as it is brought in contact with civilization, as readily as the House Wren did in the beginning; while the latter remains in some places unaffected by the settlement of the country. Such is the case in Florida, for instance, where Mr. J. A. Allen studied its habits. "The term 'house' wren," he remarks, "usually applied to this bird, is decidedly a misnomer, since it frequents the fields, the thickets, and even the forest, as much as the vicinity of houses. In the wilds of Florida, where human habitations are few, there is nothing whatever in its habits to suggest this name."

The Western House Wren is abundant in the Colorado Basin in all suitable localities; that is, in wooded and shrubby places. With reference to the region at large, the bird is resident, being found in all parts at one season or another. Yet it is perfectly migratory. At Fort Whipple, I noticed its arrival in that elevated locality, from its winter resorts in lower portions of Arizona, about the 20th of April; and it remained until October. It is nearly a month later in appearing in the northerly mountainous portions of the watershed, as in Colorado Territory for instance; and it there disappears in September. Some individuals continue their migration till they reach the northern boundary of the United States. Its extension in the other direction is less definite, and may perhaps depend upon our interpretation of the geographical race which has been described from Mexico. As in the case of the typical House Wren, I do not venture to take into consideration any of the extralimital quotations which may or may not actually refer to our species. The probability is, that true *parkmani* does not extend into Mexico, except perhaps for a little way, and only in winter; the corresponding *resident* "House" Wren of that country being what is called var. *aztecus*.

In its nidification, Parkman's Wren agrees so closely with

its eastern congener that one account would do for both. We have only to remember that it does not yet generally avail itself of the artificial accommodations that its relative usually selects, for the simple reason that there are comparatively few such resorts to be found where it lives. Nevertheless, it shows the same readiness to do so whenever opportunity offers, and is rapidly growing semi-domesticated in settled parts of the West. The nests of both birds are remarkable for the endless variety of the materials of which they are composed, the dimensions which they sometimes attain, and the diversity of the sites selected for them. The birds seem to be afflicted with an *insanabile construendi cacoëthes* (to borrow a simile from Juvenal), which impels them to keep on building after they have built enough for any practicable purpose. Their notion seems to be, that whatever place they select, be it large or small, must be completely filled with a lot of rubbish before they can feel comfortable about it. When they nest in a knot-hole, or any cavity of inconsiderable dimensions, the structure is a mass of sticks and other trash of reasonable bulk; but the case is otherwise when they get behind a loose weather-board, for instance, where there is room enough for a dozen nests; then they never know when to stop. I witnessed a curious illustration of their "insane" propensities in one case where a pair found their way through a knot-hole into one of those small sheds which stands in the back-yard, with a well-worn path leading to the house, showing its daily use. (It should be premised that a wren likes to get into its retreat through the smallest possible orifice; if the entrance be small enough, there cannot be too much room inside; and, when the hole is unnecessarily large, it is often closed up to the right size.) Having entered through a nice little hole, into a dark place, the birds evidently supposed it was all right inside, and began to build in a corner under the roof, where the joists came together. Though annoyed by frequent interruption, the indefatigable little creatures, with almost painful diligence, lugged in their sticks till they had made a pile that would fill a bushel, and I cannot say they would not have filled the whole shed had they not been compelled to desist; for they were voted a nuisance, and the hole was stopped up. The size of the sticks they carried in was enormous in comparison with their own stature; it seemed as if they could not lift them, much less drag the crooked pieces through such a narrow orifice. These coarse materials, it will

be remembered, are only the foundation of a nest, as it were; their use in places where there is no real occasion for such a mass of trash is evidently the remaining trace of primitive habits. Inside this pile of material, there is a compact cup-like nest proper, of various fine soft vegetable and animal substances. The birds are extremly prolific, ordinarily laying six or eight eggs; and they will continue to deposit more if the nest be robbed—sometimes to the number of three or four full clutches. The eggs themselves are too well known to require description. As to the sites of the nest, it is almost impossible to speak in specific terms. The old hat Audubon drew has become historic; the sleeve or pocket of a coat hung up in an outhouse—a box in a chaise from which the birds were often ejected, and to which they as often returned—boxes, jars, or gourds set up for Martins—skull of an ox or horse—nest of another bird—are among the odd places the birds have been known to fancy. In the West, favorite locations for Parkman's Wren are a rift in an old stump or log, or the crevice between a strip of partially detached bark and the trunk of a tree—places which give full scope for its inveterate liking to fill up a cavity to an unlimited extent and then barricade the entrance.

Winter Wren

Anorthura troglodytes hyemalis

Motacilla troglodytes, *partly*, of some early authors.

Sylvia troglodytes, *Wils.* AO. i. 1808, 139, pl. 8. f. 6.—*Bp.* Journ. Phila. Acad. iv. 1824, 187.—*Haym.* Pr. Phila. Acad. viii. 1856, 288.

Anorthura troglodytes, *Coues*, Key, 1872, 87, f. 30.

Troglodytes hyemalis, *Vieill.* "N. D. d'H. N. xxxiv. 1819, 514"; "EM. ii. 1823, 470".—*S. & R.* FBA. ii. 1831, 318.—*Bp.* CGL. 1838, 11.—*Aud.* OB. iv. 1838, 430, pl. 360; Syn. 1839, 76; BA. ii. 1841, 128, pl. 121.—*Nutt.* Man. i. 2d ed. 1840, 481.—*Gir.* BLI. 1844, 72.—*Bp.* CA. i. 1850, 222.—*Hoy*, Pr. Phila. Acad. vi. 1853, 312.—*Read*, ibid. 399.—*Thomps.* Vermont, 1853, 84.—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Pratten*, ibid, 603.—*Scl.* PZS. 1856, 290 (El Jacale, Mexico).—*Kneel.* Pr. Bost. Soc. vi. 1857, 233.—*Maxim.* J. f. O. 1858, 109.—*Willis*, Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Xant.* Pr. Phila. Acad. xi. 1859, 191 (Fort Tejon, Cal.).—*Scl.* Cat. AB. 1860, 23.—*C. & S.* NHWT. 1860, 191.—*Wheaton*, Ohio Agric. Rep. 1860, 365, no. 122.—*Barn.* Smiths. Rep. for 1860, 1861, 437.—*Bonrdn.* Pr. Bost. Soc. ix. 1862, 126.—*Verr.* ibid. 138.—*Verr.* Pr. Ess. Inst. iii. 1862, 149.—*Bd.* Rev. AB. 1864, 144.—*Hoy*, Smiths. Rep. for 1864, 1865, 438.—*Dress.* Ibis, 2d. ser. i. 1865, 485 (San Antonio, Texas).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*McIlwr.* Pr. Ess. Inst. v. 1866, 88.—*Brown*, Ibis, 2d. ser. iv, 1868, 421 (Vancouver).—*Allen*, "Mem. Bost. Soc. i. 1868, 494".—*Turnb.* B. E. Pa. 1869, 27; Phila. ed. 20.—*Coop.* Am. Nat. iii. 1869, 74, 75.—*Coop.* B. Cal. i. 1870, 73, fig.—*Abbott*, Am. Nat. iv. 1870, 543, 545.—*Trippe*, Pr. Ess. Inst. vi. 1871, 115.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 360; B. Fla. 1873, 40.—*Trippe*, Am. Nat. vi. 1872, 47.—*Snow*, B. Kans. 1873, 6.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.

Troglodytes hiemalis, *Peabody*, Rep. Orn. Mass. 1839, 316.

Troglodytes (Anorthura) hyemalis, *Bd.* BNA. 1858, 369.—*Allen,* Pr. Ess. Inst. iv. 1864, 68.—*Coues,* Pr. Phila. Acad. 1866, 78.

Anorthura hyemalis, *Coues & Prent.* Smiths. Rep. for 1861, 1862, 410.—*Coues,* Pr. Ess. Inst. v. 1868, 278.—*Coues,* Pr. Bost. Soc. xii. 1868, 108.—*Mayn.* Nat. Guide, 1870, 96.—*Allen,* Bull. MCZ. ii. 1871, 267.—*Trippe,* Am. Nat. vii, 1873, 498.

Troglodytes europæus, *Bp.* Journ. Phila. Acad. iv. 1824, 188.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 93, 440.—*Nutt.* Man. i. 1832, 427.

Troglodites europæus, *Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193 (Columbia River).

Anorthura troglodytes *var.* **hyemalis,** *Coues,* Key, 1872, 351.—*Coues,* BNW. 1874, 33.

Troglodytes parvulus *var.* **hyemalis,** *Ridgw.* Bull. Ess. Inst. v. 1873, 180 (Colorado).—*B. B. & R.* NAB. i. 1874, 155, pl. 9. figs. 9, 10.

Troglodytes hyemalis *var.* **pacificus,** *Bd.* Rev. AB. i. 1864, 145.

Troglodyte d'hiver, *LeM.* Ois. Canad. 1861, 183.

Winter Wren, *Authors.*

HAB.—North America at large, and portions of Mexico (Cordova, *Sclater*).

CH. SP.— ♂ ♀ *Brunneus, posticè magis rufescens, obsoletè fusco-fasciata, pogoniis exterioribus remigum exteriorum albido-fasciatis; infrà brunneo-albida, posticè brunnescens, ventre imo, hypochondriis crissoque fusco et albido undulatis; caudâ alis breviore.*

♂ ♀: Above brown, duller before, brighter behind, most of the back, together with the tail and inner wing-quills, banded with dusky, the markings obsolete on the back, where they are usually accompanied by whitish specks, strongest on the wings and tail. Outer webs of several of the primaries regularly barred with brownish-white, in marked contrast with the outer bars of the wings. An inconspicuous whitish superciliary line. Below brownish, paler or whitish anteriorly, the lower belly, flanks, and crissum heavily waved with dusky and whitish bars. Bill slender, straight, decidedly shorter than the head. Tail much shorter than the wings. Length, about 4; extent, 6–6½; wing, 1¾; tail, 1¼; bill, ⅜–½; tarsus, middle toe, and claw together, about 1⅓.

FIG. 24.—Winter Wren.

With a general resemblance to the House Wren, this species is immediately distinguished by the very short tail, beyond which the outstretched feet reach considerably, the very heavy coloring of the lower hind parts, and other characters.

A slight variety, *pacificus,* in which the general colors are darker, and the obsolete markings of the back almost inappreciable, and unaccompanied by

whitish dots, has been described from the Pacific coast region, and found as far east as Nevada.

Anorthura alascensis is more decidedly different, in the larger size, and especially the great size and peculiar shape of the bill. It is very intimately related to *A. fumigatus* of Japan, and appears to be more appreciably different from the common American form than the latter is from the European. It has been thought best to exclude the references to both these forms from the foregoing synonymatic list.

WINTER Wrens hold a very inconspicuous place among the birds of the Colorado Basin, probably as much on account of their actual scarcity as of their shy and retiring habits. I never saw them in Arizona, and have at hand no references to attest their presence fairly within the Colorado watershed. It is less improper, however, to bring them into the present connection on the strength of their known general distribution than it would be to exclude them because they have not yet been seen in this particular region; especially since they have been found in Colorado Territory, in Nevada, in California to Fort Tejon, and in portions of Mexico. Of their movements within the present area, we remain ignorant; that they occur in winter there is no doubt, but whether any breed in the higher portions, or whether all retire northward in spring, remains to be seen. The former supposition is more probable, since the birds have been found breeding in some of the Middle States, the Northern States and northward, and such dispersion in summer argues in the case of any bird that extends across the continent a summer residence in the more elevated districts of the Southwestern Territories. For a general account of the distribution and habits of this species I must refer the reader to the "History of North American Birds", the "Birds of the Northwest", and other earlier treatises.

Long-billed Marsh Wren

Telmatodytes palustris

Motacilla palustris, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 291.

Certhia palustris, *Wils.* AO. ii. 1810, 58, pl. 12, f. 4.—*Bp.* Journ. Phila. Acad. iv. 1824, 30.—*Less.* Tr. Orn. 1831, 400.—*Lord,* Pr. Roy. Arty. Inst. iv. 1864, 117.

Troglodytes palustris, *Bp.* Journ. Phila Acad. iv. 1824, 30.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 93.—*S. & R.* FBA. ii. 1831, 319, fig. (lat. 55°).—*Aud.* OB. i. 1831, 500, pl. 100.—*Nutt.* Man. i. 1832, 439.—*Brew.* Journ. Bost. Soc. 1837, 437.—*Aud.* Syn. 1839, 77.—*Peab.* Rep. Orn. Mass. 1839, 316.—*Nutt.* Man. 2d ed. i. 1840, 496.—*Aud.* BA. ii. 1841, 135, pl. 123.—*Gir.* BLI. 1844, 76.—*Gamb.* Pr. Phila. Acad. iii. 1846, 113 (California).—*Hoy,* Pr. Phila. Acad. vi. 1853, ☡2.—*Read,* Pr. Phila. Acad. vi. 1853, 399.—*Gloger,* J. f. O. 1854, 377.—*Henry,*

Pr. Phila. Acad. vii. 1855, 309 (New Mexico).—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Putn.* Pr. Ess. Inst. i. 1856, 208.—*Scl.* PZS. 1856, 290 (Cordova).—*Newb* PRRR. vi. 1857, 80.—*Heerm.* PRRR. x. 1859, 54.—*Scl.* Ibis, i 1859, 8 (Guatemala).—*Reinh.* Ibis, iii. 1861, 5 (Greenland).—*Trippe,* Pr. Ess. Inst. vi. 1871, 115.

Thryothorus palustris, *Bp.* CGL. 1838, 11.—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Turnb.* B. E. Pa. 1869, 27; Phila. ed. 20.

Cistothorus (Telmatodytes) palustris, *Bd.* BNA. 1858, 364.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 410.—*Allen,* Pr. Ess. Inst. iv. 1864, 83.

Cistothorus palustris, *Xantus,* Pr. Phila. Acad. xi. 1859, 191.—*Wheat.* Ohio Agric. Rep. 1860, 365.—*C. & S.* NHWT. 1860, 190.—*Scl.* CAB. 1861, 22.—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 163.—*Blakist.* Ibis, 1862, 5 (Saskatchewan); 1863, 67.—*Scl.* PZS. 1864, 172 (City of Mexico).—*Bd.* Rev. 1864, 147.—*Coues,* Ibis, 1865, 164 (Arizona); 1866, 265.—*Coues,* Pr. Phila. Acad. 1866, 78 (Arizona).—*McIlw.* Pr. Ess. Inst. v. 1866, 87.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*Allen,* Am. Nat. i. 1867, 161.—*Coues,* Pr. Ess. Inst. v. 1868, 278.—*Coop.* B. Cal. i. 1870, 75, fig.—*Mayn.* Nat. Guide, 1870, 98.—*Allen,* Bull. MCZ. ii. 1871, 267; iii. 1872, 175.—*Allen,* Am. Nat. vi. 1872, 396.—*Aiken,* Pr. Bost. Soc. xv. 1872, 196.—*Mayn.* B. Fla. 1873, 42.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 673, 713.—*B. B. & R.* NAB. i. 1874, 161, figs. pl. 9. f. 6.—*Brew.* Pr. Bost. Soc. xviii. 1875, 439.—*Hensh.* List B. Ariz. 1875, 155.

Telmatodytes palustris, *Henry,* Pr. Phila. Acad. xi. 1859, 107 (New Mexico).—*Coues,* Pr. Bost. Soc. xii. 1868, 108.—*Coues,* Pr. Phila. Acad. xxiii. 1871, 19.—*Coues,* Key, 1872, 87.—*Ridg.* Am. Nat. vii. 1873, 200.—*Ridg.* Bull. Ess. Inst. v. 1873, 180 (Colorado).—*Coues,* BNW. 1874, 34.

Cistothorus palustris *var.* **paludicola,** *Bd.* RAB. 1864, 149 (Western United States).—*B. B. & R.* NAB. i. 1874, 161.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 185.

Telmatodytes palustris *var.* **paludicola,** *Yarr. & Hensh.* Rep. Orn. Specs. 1874, 9.—*Hensh.* ibid. 41, 74, 101.

Thryothorus arundineus, *Vieill.* "Nouv. Dict. d'Hist. Nat. xxxiv. 1819, 58" (not of OAS. ii. 1807, pl. 108).

Troglodytes arundinaceus, *Gmb.* Journ. Phila. Acad. i. 1817, 33 (California).—*Reinh.* "Vidensk. Meddel. for 1853, 1854, 81" (Greenland).—*Reinh.* J. f. O. 1854, 438 (the same).

Thryotorus arundinaceus, *Bp.* CA. i. 1850, 220.

Telmatodytes arundinaceus, *Cab.* MH. i. 1850, 78 (type of genus).

Marsh Wren, Long-billed Marsh Wren, Salt-water Marsh Wren, *Vulg.*

HAB.—Temperate North America, and Mexico; south to Guatemala; accidental in Greenland. Breeds throughout its North American range; winters on the southern border and southward.

CH. SP.— ♂ ♀ *Brunneus, pileo fuscescente; interscapulio nigro, albo-striato; infrà ex brunneo albidus.*

♂ ♀: Above clear brown, unbarred, the middle of the back with a large black patch sharply streaked with white. Crown of head usually darker than the back, often quite blackish. A dull white superciliary line. Wings fuscous, the inner secondaries blackish on the outer webs, often barred or indented with light brown. Tail evenly barred with fuscous and the color of the back. Under parts white, usually quite pure on the belly and middle line of the breast and throat, but much shaded with brown on the sides, flanks, and crissum. Bill blackish above, pale below; feet brown. Length, about 5 inches; extent, 6¼; wing, 1⅞–2; tail about the same; bill, ½ or more; tarsus, ⅝–¾.

There is a good deal of difference in details of coloration in this species, which I cannot, however, correlate satisfactorily with any special sex, age, or season. Sometimes the whole crown of the head and the nape are quite blackish, continuous with the dorsal patch. This is especially observed in

young birds, in which, also, the white stripes on the back may be altogether wanting. Coloradan specimens in general show a tendency to shorter bill and rather more barred tail and its coverts, constituting var. *paludicola* of Baird, but the difference even in extreme cases is very slight. A specimen from Provo, Utah, is curiously bleached, the upper parts being pale gray.

OF the common Marsh Wren I shall have but a word to say, respecting its presence in the Colorado Basin, as I have already given an extended biographical notice in the "Birds of the Northwest". In noting its general distribution, as above given, the reader will of course supply the proviso that it occurs only in suitable places throughout this range, these being marshy or swampy tracts. Now, if there is anything the matter with most of the Colorado Basin—especially with Arizona and New Mexico—it is the scarcity of water. The Marsh Wren is therefore restricted in this region, as elsewhere, to the comparatively few spots which afford the requisite conditions; but in these particular tracts it is as abundant as I have seen it anywhere.

Short-billed Marsh Wren

Cistothorus stellaris

Troglodytes stellaris, "*Licht.*"—*Naum.* VD. iii. 1823, 724 (Carolina).—*Trippe,* Pr. Ess. Inst. vi. 1871, 115 (Minnesota).

Cistothorus stellaris, *Cab.* MH. i. 1850, 77.—*Bd.* BNA. 1858, 365.—*Wheat.* Ohio Agric. Rep. 1860, 365.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Sel.* CAB. 1861, 22.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 163 (Loup Fork of Platte).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 410.—*Bd.* Rev. AB. 1864, 146.—*Allen,* Pr. Essex Inst. iv. 1864, 83.—*Lawr.* Ann. Lyc. viii. 1866, 283.—*Allen,* Am. Nat. 1867, 161—*Coues,* Pr. Bost. Soc. xii. 1868, 108.—*Coues,* Pr. Ess. Inst. v. 1868, 279.—*Sumich.* Mem. Bost. Soc. i. 1869, 545 (Orizaba).—*Mayn.* Nat. Guide, 1870, 96.—*Coues,* Pr. Phila. Acad. 1871, 20.—*Allen,* Bull. MCZ. ii. 1871, 167 (Florida in winter).—*Parker,* Am. Nat. v. 1871, 168.—*Coues,* Key, 1872, 88.—*Ridg.* Am. Nat. vii. 1873, 200.—*Trippe,* Pr. Bost. Soc. xv. 1873, 236 (Iowa).—*Mayn.* B. Fla. 1873, 43.—*Snow,* B Kansas, 1873, 6.—*Coues,* BNW. 1874, 36.—*Bd. Br. & Ry.* NAB. i. 1874, 159, pl. 9, f. 7.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 9, 41 (Provo, Utah).—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 185 (Utah).

Thryothorus stellaris, *Turnb.* B. E. Pa. 1869, 27; Phila. ed. 20.

Troglodytes brevirostris, *Nutt.* Man. i. 1832, 436 (pagination of Mem. Amer. Acad. quoted here); Mem. Amer. Acad. Sci. new series, i. "1833", 98, fig.—*Aud.* OB. ii. 1834, 427, pl. 175.—*Bp.* CGL. 1838, 11.—*Peab.* Rep. Orn. Mass. 1839, 315.—*Aud.* Syn. 1839, 77.—*Nutt.* Man, i. 2d ed. 1840, 493, fig.—*Aud.* BA. ii. 1841, 138, pl. 124.—*Bp.* CA. i. 1850, 222.—*Gerh.* Naum. iii. 1853, 37.—*Hoy,* Pr. Phila. Acad. 1853, 312.—*Read,* Pr. Phila. Acad. 1853, 399.—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Putn.* Pr. Ess. Inst. i. 1856, 227.

Short-billed Marsh Wren, Fresh-water Marsh Wren, *Authors.*

The synonymy of the scarcely different *b. elegans* is:—

Cistothorus elegans, *S. & S.* Ibis, i. 1859, 8 (Guatemala); ii. 1860, 30 (Dueñas).—*Bd.* Rev. AB. 1864, 146.—*? Salv.* PZS. 1870, 182 (Veragua).—*Bd. Br. & Ry.* NAB. i. 1874, 159.

Cistothorus stellaris *b.* **elegans,** *Coues,* BNW. 1874, 36.

HAB.—Chiefly eastern province of the United States; observed, however, north to Massachusetts and Manitoba (*Coues*), and west to Nebraska (*Hayden*) and even Utah (*Henshaw*). Winters in the Southern States. Var. *elegans* from Mexico and Guatemala.

CH. SP.— ♂ ♀ *Brunneus, pileo dorsoque albo et nigro striatis, rostro brevissimo.*

♂ ♀: Upper parts brown, the crown and most of the back blackish, streaked with white. Below whitish, shaded with clear brown across the breast and along the sides, and especially on the flanks and crissum, the latter more or less indistinctly barred with dusky (often inappreciable). A whitish line over the eye. Wings and tail marked as in the last species. Upper tail-coverts decidedly barred. Bill blackish above, whitish below, extremely small, scarcely half as long as the head; feet brown. Length, 4½; extent, 6; wing and tail each about 1⅞; bill, ½–⅝.

The streaking of the head and that of the back are usually separated by a plain nuchal interval; but these areas often run together, the whole bird above being streaked with whitish and blackish upon a brown ground. The wings, tail, and entire under parts are much like those of *C. palustris*, from which the species is immediately distinguished by the markings of the upper parts and extremely short bill, which is less than half an inch long.

UNTIL within a year or two, the Short-billed Marsh Wren has been supposed to be entirely an eastern species, the most western locality quoted being Nebraska, where Dr. Hayden found the bird many years ago. One result of Mr. H. W. Henshaw's observations in the West has been to ascertain its occurrence in Utah. "While at Provo, Utah," says this writer, "we received undoubted evidence of its existence in the marshes of the river, where it lived in company with the preceding [the Long-billed] species. Although no individuals were actually captured, nests and eggs were seen which had been secured in this locality." This is as satisfactory evidence as if the bird itself had been secured, for—as should be mentioned even in the most cursory notice of the bird—the eggs differ from those of all its congeners in being pure white, without markings. This record enables me to bring the species into the present connection, as one of the rarities of the Coloradan bird-fauna.

What little information I have been able to add to the common store from my observations will be found in my other book; it relates chiefly to the abundance of the bird in certain interior regions, in comparison with its apparent rarity along the Atlantic seaboard.

CHAPTER X.—LARKS

FAM. ALAUDIDÆ

WITH the Larks we enter upon an entirely different group of birds, having no special affinities with any of the preceding families. They are strictly terrestrial, as indicated by the structure of the feet; they nest on the ground, where they spend the time when not on wing; are usually migratory, and more or less completely gregarious when not breeding. Theirs is a mixed diet of seeds, insects, &c. The Skylark of Europe, famous for its song, is a typical member of this group; and others are highly musical. I have only to add to these slight *præmonenda*, before going into some interesting details, that the unpracticed reader must be careful not to confound the Larks proper with certain birds loosely called "larks"; thus the Tit*larks*, or Pipits, though sharing the lengthened, straightened hind claw and elongated inner wing-quills of *Alaudidæ*, belong to an entirely different family, the *Motacillidæ*; while the American Field *Lark* is one of the *Icteridæ*, much further removed.

The *Alaudidæ* are remarkably distinguished from other oscine *Passeres* by the anomalous structure of the tarsal envelope. The tarsus is covered with two series of scutella, one lapping around in front, the other around behind, the two meeting along a groove on the inner face of the tarsus; the tarsus is consequently blunt behind as well as in front. There is a simple suture of the two series of plates on the outer face of the tarsus; the individual plates of each series alternate. Now in all this there is seen an approach to—say rather but little departure from—the condition of the tarsus afforded by the clamatorial or non-oscine *Passeres*, in which the rule is that the tarsus shows a single series of variously or irregularly arranged plates lapping around both before and behind, to meet like a scroll along a deep suture on the inner face of the bone. Were we to take this character alone into consideration we should be obliged to remove the *Alaudidæ* from the *Oscines*, or at any rate place them at the bottom of the series, next to the *Clamatores;* yet, as we have seen, the vocal power of the birds is of a very high order. As Dr. Cabanis remarked (Mus. Hein. i. 121) shortly after

establishing (Orn. Notizen, ii. 327) the family upon these tarsal characters, its position is "still doubtful" (*noch zweifelhaft*). In G. R. Gray's system, it immediately follows his *Emberizidæ;* and, indeed, some of the Larks bear no slight superficial resemblance to some of the Buntings. But in the sequence of oscine families adopted in the present and other of my works (which is substantially the same as that employed by the best late authorities in this country), I find no more fitting place for the family than where I ventured to put it in the "Key"—next to the *Motacillidæ*, and between the foregoing set of 10-primaried families, and such 9-primaried groups as the *Motacillidæ*, *Sylvicolidæ*, and *Fringillidæ*, which are to follow. These considerations lead up to another remarkable characteristic of the *Alaudidæ;* namely, the apparently variable number of the primaries.

The number of primaries among oscine birds, whether "nine" or "ten", has been rightly considered an important item in classification, ranking in value with the modifications of the tarsal envelope just discussed. Oscine families, and even groups of families, are conveniently distinguished by this character, and as naturally as by the "booting", or scutellation, of the tarsus. In certain families, however, the distinction fails to hold. In the *Vireonidæ*, for instance, species of the same genus have indifferently "nine" or "ten" primaries. Thus, *Vireo philadelphicus* and *V. gilvus* are two species so much alike that presence or absence of a spurious "first" primary becomes the readiest means of distinguishing them. Noting this remarkable circumstance in 1865, Professor Baird was led to look more closely into the matter. His results are summed on page 325 of the "Review of American Birds" (see also p. 160); from which it appears that in those Vireos which seem to have only nine primaries, *two* little feathers, distinct in size, shape, and to some extent in position from the general series of primary coverts, are found at the base of the supposed first primary; while in those Vireos with an obvious spurious first primary, making ten in all, only *one* such feather is found. "In all the families of Passeres where the existence of nine primaries is supposed to be characteristic," he continues, "I have invariably found, as far as my examinations have extended, that there were two of the small feathers referred to, while in those of ten primaries but one could be detected." He does not specify how far his examinations extended.

Believing this to be an important matter, which would bear further investigation, I have been led to look into the question, with the most satisfactory results, confirming Professor Baird's observations and extending them to include every one of the North American families of *Oscines*, excepting, perhaps, *Laniidæ* (in *Collurio*) and *Ampelidæ* (in *Ampelis*). With the possible exception of the two genera specified, I find, on examining numerous genera of all the North American families, that those ratedas 10-primaried have but one of these little feathers, while all the rest have two.

In clamatorial *Passeres*, perhaps without exception, there are ten fully developed primaries, the first of which may equal or exceed the next in length. In the single North American clamatorial family *Tyrannidæ*, I find, as before, only one of these little feathers. In a Woodpecker, remarkable among picarian birds in possessing only nine fully developed primaries, the first being short or spurious, there is also but one.

It seems to be conclusively proven that among the supposed 9-primaried

birds, the additional primary, making ten in all, is usually, if not always, found in the second of these little quills which overlie the first fully developed primary; and that it is this same little quill which, in 10-primaried *Oscines*, in *Clamatores*, and probably in other birds, comes to the front and constitutes the first regular primary—sometimes remaining very short, when it is the so-called "spurious" quill, in other cases lengthening by imperceptible degrees, until it may become the longest one of all. The true nature of the other one of these two little feathers becomes an interesting question: Is it also an abortive primary, as the outer certainly is, or is it one of a series of coverts?

After close examination, I fail to detect any material difference in the *position* of the two; one overlies the other, indeed, as a covert should a primary, but then the two are inserted side by side, both upon the upper side of the sheath of the first fully developed quill. In *size* and *shape*, the two are substantially the same; both being rigid and acuminate, more like remiges than like coverts, and both being abruptly shorter than the true primary coverts. So far, all the evidence favors an hypothesis that both are rudimentary remiges. To offset this, *color* usually points the other way, as in the original case of *Vireo flavifrons*, in which Professor Baird determined the underlying one of the two feathers to be a supposed wanting primary mainly because it was colored like the other primaries, while the overlying one agreed with the coverts in this respect. But it will be obvious that when, as is oftenest the case, the primaries and their coverts are colored alike, the evidence from this source fails altogether; and I find that the testimony from coloration is sometimes the other way. In *Sitta carolinensis*, for example, a 10-primaried bird with spurious first primary, the single remaining little feather is white at base across both webs, like the primaries, the true primary coverts being white only on the inner web. It is true that the overlying one of these little feathers sometimes exactly resembles a true covert; but so, also, does the other one in some cases. In morphological determinations, position and relation of parts are all-important, while mere size, shape, and especially function, go for very little. One of the two little feathers of 9-primaried birds, as we have seen, certainly corresponds to the spurious or fully developed first primary of 10-primaried; why may not the other be also a primary? It is not conclusive argument to the contrary that the feather in question is never fully developed; nor is it an insuperable objection that the function of the feather is certainly that of a covert. The strongest argument against the view here very guardedly discussed is, that if the feather be not a covert, then the first fully developed primary has none, while the rest have one apiece. While I am far from committing myself to the implied proposition that an oscine bird possesses eleven primaries, I think it proper to bring the case forward as one which will bear looking into, and which will probably remain open until the exact relations between a *remex* and a *tectrix* are ascertained. Should it be determined that an *Oscine* may show traces of *two* suppressed primaries, instead of only the single one which certainly persists in 10-primaried birds, the fact would tend to increase the value already justly set upon number of remiges as a taxonomic factor. It is generally admitted, and it seems to be unquestionable, that here, as in numberless other cases, reduction in number and specialization in function of parts indicates a higher grade of organization; for

only the lower birds show the higher aggregate number of remiges, and in none but the higher are the developed primaries ever reduced to nine. A gradual reduction in the number of remiges seems to be directly correlated with that progressive consolidation or compaction of the distal osseous segments of the fore limb which reaches its climax in the wing of the most highly organized birds of the present epoch.

Returning to the special subject of the present chapter after this digression, we have to note that the *Alaudidæ*, like the *Vireonidæ*, show the variability of the primaries already mentioned. In our genus *Eremophila*, in which only nine primaries are developed, there are two of the small feathers above mentioned. The overlying one is exactly like one of the primary coverts; the other, though not very dissimilar, more resembles an abortive primary. In *Alauda arvensis*, where there is a minute but obvious spurious quill, there is but one such feather. In *Galerita cristata*, with a spurious quill about two-thirds of an inch long, there is likewise but one. Upon the presence or apparent absence of the spurious quill, Dr. Cabanis was led to divide his *Alaudidæ* into two subfamilies; but as the case appears, the character is scarcely a satisfactory one. He felt some uncertainty himself, as he says, after alluding to the doubtful position of the family in the system,—"*ebenso die Eintheilung in Subfamilien*". I shall consequently present no subdivision of the family, which may be briefly characterized as follows:—

CHARS.—Structure of wing and tarsal envelope as already fully indicated. Feet stout; hind claw lengthened and nearly straight. Inner secondaries (the so-called tertials) elongated and flowing (as in *Motacillidæ*). Bill of variable shape, usually conoid and acute, sometimes more elongated and thrush-like; nostrils more or less covered, often completely concealed, by tufts of antrorse feathers. No obvious rictal vibrissæ. Head sometimes crested or peculiarly tufted.

Represented in North America by a single genus and species.

Genus EREMOPHILA Boie

CHARS.—Primaries apparently only nine (no obvious spurious first primary). Point of the wing formed by the first three developed primaries. Inner secondaries elongated. Tail of medium length, nearly even, the middle pair of feathers different in shape and color from the rest. Bill compressed-conoid, acute, shorter than head. Nostrils completely concealed by dense tufts of antrorse feathers. Head not crested, but a peculiar tuft of feathers over each ear, somewhat like the so-called "horns" of some Owls. Feet of ordinary alaudine characters, as already given. Coloration peculiar in the presence of yellowish tints and strong black bars on the head and breast.

Horned Lark

Eremophila alpestris

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Phileremos alpestris, *Brehm,* VD. 1831, 313.—*Brehm,* Hdbh. Stub. Hausvög. 1832, 295.—*Bp.* CGL. 1838, 37.—*Hartl.* Syst. Verz. 1844, 80.—*Zander,* Arch. Mecklenb. xv. 1861, 91.

Philermes alpestris, *Brehm,* Hdbh. Stub. Hausvög. 1832, p. xvii.

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Alauda flava, *Gm.* SN. i. 1788, 800, no. 32 (Siberia). (Based on PE. 650, f. 2).

Alauda nivalis, *Pallas,* Zoog. R. A. i. "1811" (1831), 519.

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Alauda cornuta, *Wils.* AO. i. 1808, 87 (in text).—*S. & R.* FBA. ii. 1831, 245, f. 246.—*Towns.* Journ. Phila. Acad. viii. 1839, 154.—*Maxim.* Reise, i. 1839, 367.

Eremophila cornuta, *Boie,* Isis, 1828, 322.—*Bd.* BNA. 1858, 403.—*? Henry.* Pr. Phila. Acad. xi. 1859, 107 (New Mexico).—*? Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*C. & S.* NHWT. 1860, 195.—*Barn.* Smiths. Rep. for 1860, 1861, 437.—*Wheat.* Ohio. Agr. Rep.

for 1860, 365.—*Coues*, Pr. Phila. Acad. 1861, 221.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 411.—*Boardm.* Pr. Bost. Soc. ix. 1862, 126.—*Verr.* Pr. Ess. Inst. iii. 1862, 149.—*? Blak.* Ibis, iv. 1862, 5; v. 1863, 68.—*Allen*, Pr. Essex Inst. iv. 1864, 69.—*Dress.* Ibis, 2d ser. 1865, 486 (Texas).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 289.—*McIlwr.* Proc. Ess. Inst. v. 1866, 88.—*Coues*, Pr. Ess. Inst. v. 1868, 280.—*Brown*, Ibis, 2d ser. 1868, 421 (Vancouver).—*Coues*, Pr. Bost. Soc. xii. 1868, 113.—*? Coop.* Am. Nat. iii. 1869, 75, 295, 297; 1874, 17.—*? Aiken*, Pr. Bost. Soc. xv. 1872, 202.—*? Trippe*, Pr. Bost. Soc. xv. 1873, 236.

Phileremos cornutus, *Bp.* CGL. 1838, 37.

Otocoris cornuta, *Bp.* CA, i. 1850, 246.

Otocoryx cornuta, *Licht.* "Nomencl. 1854, 239".

Otocorys cornuta, *Bp.* "CR. xxxviii. 1854, 64".

Alauda rufa, *? Maxim.* J. f. O. vi. 1858, 349 (Missouri).

Otocoris rufa, *Hoy*, Pr. Phila. Acad. vi. 1853, 382 (Wisconsin).

Lark, *Catesby*, Nat. Hist. Carolina, i. 1731, 32, pl. 32.

Shore Lark, *Forst.* l. c.—*Penn.* AZ. ii. 1785, 392. no. 278.—*Lath.* Syn. ii. pt. ii. 1783, 385, no. 19.

Hausse-col noir ou Alouette de Virginie, *Buff.* "Hist. Nat. Ois. v. 55".

Alouette de Virginie, Ortolan, *LeM.* Ois. Canad. 1861, 225.

Horned Lark, Shore Lark, *Authors.*

b. leucolæma

? Otocoris occidentalis, *McCall*, Pr. Phila. Acad. v. 1851, 218 (Santa Fé, N. Mex.).—*Bd.* Stansbury's Rep. GSL. 1852, 318, 331.

Otocorys alpestris, *Newb.* PRRR. vi. 1857, 88.

Eremophila alpestris, *Allen*, Bull. MCZ. iii. 1872, 176.

Eremophila cornuta, *Bd.* PRRR. x. 1859, Beckwith's Route, Birds, 13, pl. 32.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1872, 174.—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 464.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 685.—*Hold.* Pr. Bost. Soc. xv. 1872, 202.

Eremophila alpestris *b.* **leucolæma,** *Coues*, BNW. 1874, 38.—*Coues*, Am. Nat. viii. 1874, 602.—*Allen*, Pr. Bost. Soc. xvii. 1874, 50.

c. chrysolæma

Alauda cornuta, *Sw.* Philos. Mag. i. 1827, 434 (Mexico).

Phileremos cornutus, *Bp.* PZS. 1837, iii. (Mexico).

Eremophila cornuta, *Coues*, Ibis, 2d ser. i. 1865, 164 (Arizona).—*Coues*, Pr. Phila. Acad. xviii. 1866, 79 (the same).

Alauda glacialis, *Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 56 (Mexico).

Alauda chrysolaema, *Wagl.* Isis, 1831, 350 (Mexico).

Otocoris chrysolaema, *Bp.* CA. i. 1850, 246.

Otocorys chrysolaema, *Cab.* MH. i. 1851, 122.

Alauda chrysolæma, *Scl.* PZS. 1855, 66.

Otocorys chrysolæma, *Bp.* "CR. xxxviii. 1854, 65".—*Scl.* PZS. 1856, 306 (Mexico); 1859, 372 (Oaxaca).

Eremophila chrysolæma, *Scl.* PZS. 1864, 174 (City of Mexico).

Eremophila cornuta *var.* **chrysolæma,** *Bd.* BNA. 1858, 403.

Eremophila alpestris *c.* **chrysolæma,** *Coues*, BNW. 1874, 38, 231.

Alauda minor, *Giraud*, 16 Sp. Tex. B. 1841.

Eremophila minor, *Scl.* Cat. AB. 1862, 126.

Alauda rufa, *Aud.* B. Amer. vii. 1843, 353, pl. 497.—*Bd.* Stansb. Rep. GSL. 1852, 331.

Otocoris rufa, *Heerm.* PRRR. x. 1859, Williamson's Route, Birds, 45.

HAB.—The typical form inhabits the greater part of the northern hemisphere (Europe and Asia as well as most of North America). Var. *leucolæma* breeds on the plains of the United States, north of about 40°. Var. *chrysolæma* breeds in the Western United States, south of about 40°, and southward through Mexico.

CH. SP.—*a.* ALPESTRIS.—*Notæo griseo plus minusve rufescenti-vinaceo tincto, nuchâ tectricibusque alarum et caudæ vegetioribus, dorso sordidiore, strigis fuscis notato; gastræo albido, lateribus dorso subsimilibus, peltâ magnâ pectorali nigrâ; strigâ malari et*

infraoculari nigrâ; strigâ postfrontali per lateribus pilei ductâ nigrâ; reliquis partibus laterum capitis, strigâ frontali et superciliari, necnon gulâ totâ, albis vel flavis; rectricibus mediis duabus remigibusque intimis dorso subsimilibus; rectricibus lateralibus omnibus nigris, extimis albido marginatis; remigibus fuscis, pogonio exteriore primarii extimi albido; rostro plumbeo-nigricante, ad basin mandibulæ pallidiore; pedibus nigris.

b. LEUCOLÆMA.—*Persimilis, sed coloribus dilutioribus; capite vix flavicante; plagis nigris minoribus.*

c. CHRYSOLÆMA.—*Minor, coloribus vegetioribus; notæo ferè cinnamomino, capite flavissimo; plagis nigris extensis.*

The typical form.—♂ ♀, adult, in breeding plumage: Upper parts in general pinkish-brown, this pinkish or vinaceous or lilaceous tint brightest on the nape, lesser wing-coverts, and tail-coverts, the rest of the upper parts being duller and more grayish-brown, boldly variegated with dark-brown streaks; the middle pair of tail-feathers and several of the inner secondaries rufous-brown, with darker centers. Under parts, from the breast backward, white—the sides, however, strongly washed with the color of the upper parts, and some mottling with the same usually extending across the lower part of the breast. A large, distinct, shield-shaped, black area on the breast. Tail-feathers, except the middle pair, black, the outermost edged with whitish. Wing-quills, except the innermost, plain fuscous, the outer web of the first primary whitish. Lesser wing-coverts usually tipped with grayish-white. Peculiar head-markings as follows:—Top of head like nape; bar across front of vertex, thence extended along sides of crown, and produced into a tuft or "horn", black; front and line over eye, also somewhat produced to form part of the tuft, white or yellowish; a broad bar, from the nostrils along the lores, thence curving below the eye and widening as it descends in front of the auriculars, black; rest of the sides of the head and whole throat white or sulphury-yellow. Bill plumbeous-blackish, bluish-plumbeous at base below (sometimes there yellowish); feet and claws black; iris brown. Length of ♂, 7–7½; extent, 13–14; wing probably always over 4—4¼–4½; tail, 2¾–3; bill, from extreme base of culmen, ⅝–½; tarsus, ⅞–$\frac{9}{10}$; middle toe and claw rather less; hind claw about ½—usually longer than its digit, but very variable. ♀ commonly smaller than the male. Length, 6¾–7¼; extent, 12¾–13¼; wing about 4, &c.

Aside from the varietal conditions, to be presently noticed, the precise shade of typical *alpestris* varies greatly, especially of those parts which are tinged to greater or less degree with the peculiar "pinkish-brown," lilaceous or cinnamon, and with the sulphury-yellow about the head.

♂ ♀, adult, in winter: As usually seen in most of the United States in the fall, winter, and early spring, the birds differ from the above in a general more sordid coloration of the upper parts, which may be simply grayish-brown, heavily streaked with dusky, even on the crown, with little or none of the "pinkish" tints just mentioned; and in the lack or restriction of the black markings of the head and breast, or their being veiled with whitish tips of the individual feathers; nevertheless, the sulphury tinge of the white parts about the head is usually very conspicuous.

Fledglings, just from the nest, are altogether different from the adults. They have the upper parts dusky, mixed with some yellowish-brown, and sprinkled all over with whitish or light tawny dots, each feather having a terminal speck. Most of the wing- and tail-feathers have rusty, tawny, or whitish edging and tipping. The under parts are white, mottled with the colors of the upper parts along the sides and across the back. There are no traces of definite black markings about the head and breast, nor is there any yellow tinge. Bill and feet pale or yellowish. This peculiar speckled stage is of brief duration; with an early autumnal change, a dress, little if at all different from that of the adults in winter, is acquired.

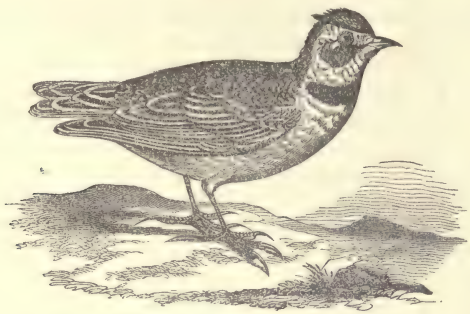

FIG. 25.—Horned Lark.

Var. leucolæma.—Size of the foregoing. General coloration extremely pale—brownish-gray, the peculiar pinkish tint of certain parts sharing the general pallor. Black markings on head and breast much restricted in extent, and white surroundings correspondingly increased—thus, the black postfrontal bar is scarcely or not broader than the white of the forehead. No yellow about the head, excepting usually a slight tinge on the chin. The changes of plumage are parallel with those already given; even the nestlings show the same decided pallor.

Var. chrysolæma.—Smaller than either of the foregoing: ♂ with the wing scarcely or not 4, and other dimensions to correspond; a very small specimen before me, probably ♀, has the wing only $3\frac{1}{2}$; in another, marked ♂, it is $3\frac{3}{4}$. The "pinkish" tinge intensified into cinnamon-brown, and pervading nearly all the upper parts. Yellow of the head intensified, and the black markings very heavy—the black on the crown often or usually widens to occupy more than half of the cap, reducing the white frontlet to a mere trace.

As I remarked in the "Birds of the Northwest", the question of the relationships of our Larks is rather intricate, though we probably have an approximately correct solution of the difficulty. Probably no authors of repute now undertake to maintain any of the supposed or alleged differences between the ordinary North American bird and that of Europe and Asia. (It may here be remarked parenthetically that in any event our bird is to bear the name *alpestris*, that having been based by Linnæus upon the "Lark" of Catesby—a new name, if any, being required for the European bird.) This form is dispersed, at one or another season, over most of North America, breeding far north (I have specimens from the Arctic coast) and

generally throughout British America, and migrating into the United States in the fall, to leave again in the spring. Those birds which breed in the United States, in the open country between Iowa, Wisconsin, and Minnesota and the Rocky Mountains, north of about 40°, and are resident to some degree on those plains, have acquired certain recognizable peculiarities which stamp them as a geographical race. This form has been occasionally mentioned by late writers under the name of "occidentalis", which I observe is retained in the "History of North American Birds" (ii. p. 140). But Colonel McCall's description was based upon a bird from Santa Fé, New Mexico, and is therefore most probably applicable to *chrysolæma*, where also belong the other specific names which have been imposed upon our Western Larks. A new name being apparently required, I called this var. *leucolæma* in the work above mentioned. Var. *chrysolæma* is more decidedly different in the points already given. Some of the specimens before me, labeled "California", but probably either from Lower California or Mexico, are so strongly marked that, in the absence of connecting links, I should give it specific rank. Many intermediate examples are, however, forthcoming.

Specimens from the northerly portions of the Pacific coast regions are said to be nearer typical *alpestris*, but even darker than that form, and thus still further removed from either *leucolæma* or *chrysolæma*.

Lacking opportunity at present of reviewing the case of *E. peregrina* of New Granada (*Scl.* PZS. 1855, 160, pl. 102, Bogota), which is held to be specifically distinct by several high authorities, I have omitted the references to it, though in the "Birds of the Northwest" I added them to those of *chrysolæma*, judging it to be only the extreme of differentiation which the latter has sustained.

The preparation of exact synonymy in the present case has proved a matter of some difficulty, especially since the case has been complicated by the introduction of var. *leucolæma*. When other clue was wanting, I have collated the quotations mainly upon geographical considerations, not always, however, satisfactory. For many of the references are actually more comprehensive than my collation would imply, since they include the varieties, especially var. *leucolæma;* in other cases, geographically restricted, it is still uncertain which variety a writer had in view, since both may be found associated at some seasons. I have been obliged to query some references, and take others "upon their face", according to the name used.

RESPECTING more particularly the Larks of the Colorado Basin, it should be observed that the birds which *breed* within this area are, probably without exception, referable to the var. *chrysolæma*, even though the peculiarities may not always be as strongly expressed as they are in those which breed further south. This form is abundantly distributed in suitable localities, and resident. With the fall migration, however, northern-bred birds of the other variety (*leucolæma*) enter this region, and the two may be found associated. No difference in habits has been observed.

CHAPTER XI.—WAGTAILS

FAM. MOTACILLIDÆ

CHARS.—Primaries only nine (the short or spurious first primary found in all the birds of foregoing families excepting *Eremophila* remaining undeveloped), the first nearly or about as long as the next, and the point of the wing formed by the first three, four, or five quills, which are abruptly longer than the succeeding ones; inner secondaries enlarged, lengthened, and flowing, the longest one usually about equaling the first primary when the wing is closed. (This construction of the wing is a prime characteristic of the family.) Tail of variable, but always conspicuous, length, of different shapes in the several genera, but usually double-rounded, *i. e.*, central and external pairs of feathers both shorter than intermediate ones; in life held tilted up, or vibrated up and down with a peculiar see-saw motion (a characteristic habit of birds of this family, whence comes the name Wagtail—*Mota-cilla*—*Σεισ-ουρα*). Feet large, in adaptation to terrestrial habits; progression ambulatorial, not saltatorial; tarsus slender, lengthened, equaling or exceeding the middle toe in length, of ordinary oscine characters as to scutellation; inner toe cleft to the very base, outer adherent to middle by its basal joint only. Hind claw lengthened and straightened in most of the genera (not in *Motacilla* itself). Bill shorter than the head, very slender, straight, acute, usually notched near the tip, not furnished with obvious rictal vibrissæ, though feathers about its base are bristle-tipped. Nostrils patent, in slight fossæ.

This is a pretty well-marked family, easily distinguished from any of the foregoing by the development of only nine primaries, and from the following 9-primaried *Oscines* by the particular shape of the wing, in connection with ambulatorial feet and slender, strictly "insectivorous" or "dentirostral" bill. The birds may be considered Sylvians modified for terrestrial habits. The family is characteristic of the Old World, being poorly represented in the New, where only some eight or ten of the about one hundred accredited species occur. There

are two groups in the family, commonly admitted as subfamilies. In one of these, the *Motacillinæ*, or typical Wagtails, the tail is lengthened to equal or exceed the wing, and formed of narrow feathers gradually tapering to their rounded ends; only three primaries usually enter into the point of the wing; the tarsi are longer and slenderer; the lateral toes are shorter; and the system of coloration for the most part has what a painter would call "breadth", the colors being massed in large areas. The hind claw in *Motacilla* is of ordinary characters; but in *Budytes*, the next most prominent genus, it is lengthened and straightened. The *Motacillinæ* are only represented in the western hemisphere by the *Motacilla alba*, or common White Wagtail of Europe, which has occasionally been found in Greenland, and by the Yellow Wagtail, *Budytes flava*, an ubiquitous species of the Old World lately ascertained to occur abundantly in Alaska. The cut of this species (fig. 26) will illustrate some motacilline features. The other group is the

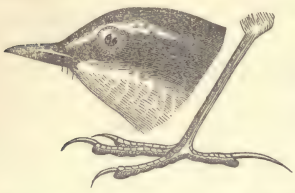

FIG. 26.—Head and foot of Yellow Wagtail.

SUBFAMILY ANTHINÆ: PIPITS, OR TITLARKS

In these, the tail is shorter than the wings, and composed of broader feathers retaining their width to near the end; four or five primaries usually form the point of the wing; the tarsi are relatively shorter, usually about equal to the middle toe; the lateral toes are longer, the points of their claws reaching beyond the base of the middle claw; the hind claw is always lengthened and straightened (as in the figure beyond given under head of *Anthus ludovicianus*); and the coloration is "niggled", that is to say, broken up in streaks and spots. The species of *Anthinæ* make up nearly or about half the family; they are chiefly referable to the

Genus ANTHUS Bechstein

This has been split by modern systematists into a good many genera, which, however, are scarcely worth retaining except as sections. *Neocorys*, *Pediocorys*, and *Notiocorys* are the American subdivisions, the last two belonging to South America, the

first one to our country. *Neocorys spraguii** should be found in the Colorado Basin, but has not been, so far as I know. A careful description and a full account of the habits of this interesting bird is given in the "Birds of the Northwest", to which the reader is referred. A typical *Anthus*, *A. pratensis*, is occasionally found in Greenland (*Reinh.* J. f. O. 1854, 439; Ibis, 1861, 6) and Alaska; another, *A. cervinus*, is said to occur in the Aleutian Islands (*Zander*, J. f. O. i. 1853, Extrah. 1854, 64). With these exceptions, the following is the only known North American species of *Anthus* :—

American Pipit, or Titlark

Anthus ludovicianus

Alauda ludoviciana, *Gm.* SN. i. pt. ii. 1788, 793, no. 14 (from Buff. & Lath.).—*Lath.* IO. ii. 1790, 494, no. 9.

Anthus ludovicianus, *Licht.* "Verz. 1823, 37".—*Bp.* CGL. 1838, 18.—*Aud.* Syn. 1839, 94.—*Nutt.* Man. i. 2d ed. 1840, 517.—*Aud.* BA. iii. 1841, 40, pl. 150.—*Gir.* BLI. 1844, 94.—*Gamb.* Pr. Phila. Acad. iii. 1846, 114.—*Gamb.* Journ. Phila. Acad. i. 1847, 37.—*Bp.* CA. i. 1850, 249.—*McCall,* Pr. Phila. Acad. v. 1851, 215 (Texas).—*Hoy,* Pr. Phila. Acad. vi. 1853, 310.—*Read,* Pr. Phila. Acad. vi. 1853, 399.—*Reinh.* J. f. O. 1854, 439 (Greenland).—*Henry,* Pr. Phila. Acad. vii. 1855, 310 (New Mexico).—*Kenn.* Tr. Ill. Agr. Soc. i. 1855, 583.—*Pratten,* Tr. Ill. Agr. Soc. i. 1855, 601.—*Putn.* Pr. Ess. Inst. i. 1856, 209.—*Scl.* PZS. 1856, 293 (Mexico).—*Scl.* PZS. 1857 126 (California).—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Bd.* BNA. 1858, 232.—*Willis,* Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).—*Bland,* Smiths. Rep. for 1858, 1859, 287 (Bermuda).—*Martens,* J. f. O. 1859, 214 (Bermuda).—*Jones,* Nat. in Bermuda, 1859, 29.—*S. & S.* Ibis, 1859, 9 (Guatemala).—*Henry,* Pr. Phila. Acad. 1859, 106.—*Xantus,* Pr. Phila. Acad. 1859, 190.—*Heerm.* PRRR. x. 1859, 45.—*C. & S.* NHWT. 1860, 176.—*Coues,* Pr. Phila. Acad. 1861, 220 (Labrador; eggs).—*Barn.* Smithson. Rep. for 1860, 1861, 435.—*Reinh.* Ibis, 1861, 6 (Greenland).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 405.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 159.—*Blasius,* Ibis, 1862, 71 (Heligoland, Europe).—*Blak.* Ibis, 1862, 4 (Saskatchewan).—*Verr.* Pr. Ess. Inst. iii. 1862, 156.—*Boardm.* Pr. Bost. Soc. ix. 1862, 124.—*Blak.* Ibis, 1863, 60.—*Bd.* Rev. AB. 1864, 153.—*Allen,* Pr. Ess. Inst. iv. 1864, 58.—*Dress.* Ibis, 1865, 476.—*Coues,* Ibis, 1866, 64 (Colorado Desert).—*Coues,* Pr. Phila. Acad. 1866, 67 (Arizona).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*Weiz,* Pr. Bost. Soc. 1866, 267 (Labrador).—*McIlw.* Pr. Ess. Inst. v. 1866, 85.—*Allen,* Mem. Bost. Soc. i. 1868, 494.—*Coues,* Pr. Bost. Soc. xii. 1868, 108.—*Coues,* Pr. Ess. Inst. v. 1868, 268.—*Coues,* Pr. Phila. Acad. 1868, 82.—*Butch.* Pr. Phila. Acad. 1868, 149.—*Brown,* Ibis, 1868, 420 (Vancouver).—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.—*Dall & Bann.* Tr. Chic. Acad. i. 1869, 277 (Alaska).—

***Anthus (Neocorys) spraguii.—Missouri Pipit.**

Alauda spragueii, *Aud.* BA. vii. 1844, 334, pl. 486 (Dakota).

Otocoris sprangeri, *Bp.* CA. i. 1850, 246.

Agrodoma spraguei, *Bd.* Stansbury's Rep. 1852, 329.

Neocorys spraguii, *Scl.* PZS. 1857, 5.—*Blakist.* Ibis, 1862, 4 (Saskatchewan).—*Blakist.* Ibis, 1863, 61 (Minnesota to Saskatchewan).

Neocorys spragueï, *Bd.* BNA. 1858, 234.—*Allen,* Am. Nat. vii. 1873, 745.—*B. B. & R.* NAB. i. 1874, 175, figs. pl. 10, f. 5.—*Allen,* Pr. Bost. Soc. xvii. 1874, 50 (habits).—*Coues,* BNW. 1874, 42 (full description and account of habits).

Anthus spragueï, *Bd.* Rev. AB. 1864, 155.—*Coues,* Am. Nat. vii. 1873, 697.

Sprague's Missouri Lark, Missouri Skylark, Sprague's Pipit, *Authors.*

Stev. U. S. Geol. Surv. Terr. for 1870, 1871, 463.—*Coop.* Pr. Phila. Acad. 1870, 75.—*Coop.* B. Cal. i. 1870, 78.—*Coues*, Pr. Phila. Acad. 1871, 19.—*Trippe*, Pr. Ess. Inst. vi. 1871, 115.—*Allen*, Bull. MCZ. ii. 1871, 267.—*Allen*, Bull. MCZ. iii. 1872, 161, 175 (Colorado, breeding).—*Allen*, Am. Nat. vi. 1872, 396.—*Harting*, Man. Brit. B. 1872, 109 (Great Britain ?).—*Aiken*, Pr. Bost. Soc. 1872, 196 (Colorado, breeding).—*Trippe*, Pr. Bost. Soc. xv. 1872, 234.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 360.—*Coues*, Key, 1872, 90, f. 34.—*Mayn.* B. Fla. 1873, 44.—*Ridgw.* Bull. Ess. Inst. v. 1873, 180.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713.—*Snow*, B. Kans. 1873, 4.—*Trippe*, Pr. Bost. Soc. xv. 1873, 234.—*Allen*, Pr. Bost. Soc. xvii. 1874, 50.—*Coues*, BNW. 1874, 40.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 10.—*Hensh.* Rep. Orn. Specs. 1874, 41.—*B. B. & R.* NAB. i. 1874, 171, fig. pl. 10, f. 3.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 187.

Alauda ludovicana, *Turt.* SN. i. 1806, 482.

Anthus ludoviceanus, *Bd.* Ives's Rep. pt. v. 1861, 5.

Anthus ludovicinus, *Merriam*, U. S. Geol. Surv. Terr. for 1872, 1873, 674.

Anthus ludovicanus, *Trippe*, Coues's BNW. 1874, 231.

Alauda rubra, *Gm.* SN. i. pt. ii. 1788, 794, no. 15 (from Briss., Buff., Edw., etc.).—*Lath.* IO. ii. 1790, 494, no. 10.—*Turt.* SN. i. 1806, 482.

Motacilla hudsonica, *Lath.* IO. ii. 1790, 503, no. 6 (no references; orig. descr. well suiting present species).—*Turt.* SN. i. 1806, 616.—*V.* OAS. ii, 1807, 47.—*V.* Ency. Méth. ii. 1823, 409.

Alauda migratoria, *Bartram*, Trav. Fla. 1st Am. ed. 1791, p. 290 bis (see Coues, Proc. Phila. Acad. 1875, 346).

Anthus rubens, *Merrem*, "Ersch Grub. Encycl."

Alauda rufa, *Wils.* AO. v. 1812, 89, pl. 42, f. 4.—*Bp.* Journ. Phila. Acad. iv. 1824, 181.

Anthus spinoletta, *Bp.* Ann. Lyc. N. Y. ii. 1826, 90.—*Nutt.* Man. i. 1832, 450.—*Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193 (Columbia River).—*Towns.* Journ. Phila. Acad. viii. 1839, 154.—*Peab.* Rep. Orn. Mass. 1839, 317.—*Thomps.* NH. Vermont, 1853, 86.

Anthus aquaticus, *S. & R.* FBA. ii. 1831, 231, pl. 44.—*Aud.* OB. i. 183-, name on pl. 10.

Anthus pipiens, *Aud.* OB. i. 1832, 408; v. 1839, 449, pl. 80.—*Bp.* CGL. 1838, 18.

Anthus reinhardtii, *Holböll*, "Fn. Grönl. ed. Paulsen, 1846, 25".

Alauda pensilvanica, *Briss.* Orn. 1760, App. 94, no. 13.

Anthus pensylvanicus, *Thienemann*, Rhea, ii. 1849, 171 (monographic).—*Zander*, J. f. O. i. 1853, Extrah. 1854, 63 (monographic).—*Zander*, Naumannia, iv. 1854, 13 (monographic).

Anthus pennsylvanicus, *Gaetke*, J. f. O. 1856, 71 (Heligoland).

Farlouzanne, *Buff.* "Hist. Nat. des Ois. v. 38".

Louisiane Lark, *Lath.* Syn. ii. pt. ii. 1783, 376, no. 7 (based on Buff. v. 38).

Hudsonian Wagtail, *Lath.* Syn. Suppl. ii. 1801, 231, no. 3.

Alouette aux joues brunes de Pensilvanie, *Buff.* "Hist. Nat. des Ois. v. 58".

Hochequeue de la baie d'Hudson, *V.* Ency. Méth. ii. 1823, 409.

Lark from Pensylvania, *Edw.* "Glean. pt. ii. 185, pl. 297".

Red Lark, *Penn.* AZ. ii. 1785, 393, no. 279 (Pennsylvania).—*Lath.* Syn. ii. pt. ii. 1783, 376, no. 8.

Polarpieper, *Thienemann*, l. c.

Alouette pipé, *Le Moine*, Ois. Canad. 1861, 185.

American Pipit or Titlark, Prairie Titlark, Reddish-brown Titlark, Brown Lark, *Authors.*

FIG. 27.—Bill and foot of American Pipit; nat. size.

HAB.—The whole of North America. South to Guatemala and perhaps further. Greenland. Bermudas. Casual in Europe (Heligoland, Gätke; and see especially *Harting, l. c. suprà*). No West Indian quotations.

CH. SP.— ♂ ♀ *Olivaceo-brunneus, fusco-notatus; alis fuscis, brunneo-limbatis; caudâ fuscâ, rectricibus lateralibus* 1–3 *ex parte albis; orbitis, superciliis, partibusque inferioribus ex toto brunneo-albidis, pectore lateribusque olivaceo-brunneo striatis.*

♂ ♀: Above, olive-brown, most of the feathers with dusky centres, giving a streaked or nebulated appearance. Wings blackish-brown, the quills and

their coverts edged with dull pale brown; tail blackish, the central feathers like the back, one to three of the lateral feathers, partly at least, white, the outer often wholly white. Line over the eye, eyelids, and entire under parts brownish-white, or pale ochrey- or buffy-brown (very variable in shade), the sides of the throat and body and the breast spotted or streaked with the color of the back. Bill blackish, pale at base below; feet brown. Length, 6¼–7; extent, 10¼–11; wing, 3¼–3½; tail, 2⅝–3; bill about 1½; tarsus, ¾.

I have not examined newly-fledged birds, which may be more streaky than as above described. Well-feathered birds of both sexes, at all seasons, are not distinguishable. The shade of the under parts is extremely uncertain, varying from brownish-white to rich buffy-brown, and the amount of white on the tail is equally variable.

MR. J. A. ALLEN'S discovery of the breeding of this species on the highest peaks of the mountains in Colorado is the most interesting of the recent contributions to its history, and enables us to speak of the Titlark as a resident bird of the region now under consideration. However, in neary all of the Colorado water-shed the bird is only a winter visitant; it is common and generally distributed in suitable places. Its habits are too well known to require any extended notice in the present connection; I have already given the results of my own observations in Labrador and other portions of North America in some of my publications cited above, notably the "Birds of the Northwest".

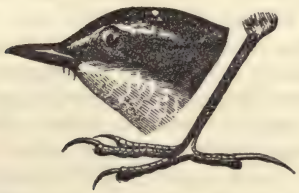

FIG. 28.—Head and foot of Budytes flava, a typical Motacilline.

CHAPTER XII.—AMERICAN WARBLERS

Fam. SYLVICOLIDÆ

PRIMARIES *nine;* rectrices twelve; scutellation of tarsi, disposition of wing-coverts, and structure of lower larynx strictly Oscine in character. It is simply impossible to define the *Sylvicolidæ*, because it is an artificial group, corresponding with no natural division of birds, and consequently having no natural boundaries. As customarily limited, this family—its North American representatives at any rate—may be distinguished from other nine-primaried *Oscines*, excepting *Cœrebidæ*, by the following negations:—Inner secondaries not enlarged, nor hind toe lengthened and straightened, as occurs in *Motacillidæ*. Bill not "fissirostral", as in *Hirundinidæ;* nor strongly "dentirostral",—that is, hooked and toothed at end,—as in *Laniidæ* and *Vireonidæ;* nor yet typically "conirostral", as in *Fringillidæ;* and without the tooth or lobe near the middle of the commissure which exists in the genus *Pyranga* of *Tanagridæ*. From the *Cœrebidæ*,* or Honey-creepers of the warmer parts of

* In B. B. & R. Hist. N. A. B., i. p. 177, we read:—"In fact, we are of the opinion that no violence would be done by adopting this view [the propriety of uniting *Tanagridæ, Sylvicolidæ,* and *Cœrebidæ*], and would even include with the above-mentioned families the *Fringillidæ* also. The order of their relation to one another would be thus: *Fringillidæ, Tanagridæ, Sylvicolidæ, Cœrebidæ;* there being scarcely any break in the transition between the two extremes, unless there are many genera referred to the wrong family, as seems very likely to be the case with many included in the *Tanagridæ*. The *fringilline* forms of the latter family are such genera as *Buarremon* and *Arremon*, they being so closely related to some *fringilline* genera by so many features—as rounded concave wing, lax plumage, and spizine coloration—as to be scarcely separable. Either these two families are connected so perfectly by intermediate forms as to be inseparable, or the term *Tanagridæ* covers too great a diversity of forms. With the same regularity that we proceed from the *Fringillidæ* to the typical forms of the *Tanagridæ* (*Pyranga, Tanagra, Calliste*, etc.), we pass down the scale from these to the *Sylvicolidæ;* while between many genera of the latter family, and others referred to the *Cœrebidæ*, no difference in external anatomy can be discovered, much less expressed in a description."

America, the *Sylvicolidæ* are not distinguished by any known character; and the same is the case in the relations both with the *Fringillidæ* and the *Tanagridæ*. For, though extreme forms of *Sylvicolidæ*, *Tanagridæ*, and *Fringillidæ* are sufficiently

In his previous critical studies of this group, Prof. Baird had been as much perplexed. I quote some passages from Rev. A. B., pp. 160, 161:—"The *Sylvicolidæ* are essentially characterized among the Oscines with nine primaries, by their small size, the usually slender and conical insectivorous bill, shorter than the head, without angle in the gape near the base; the toes deeply cleft so as to leave the inner one free almost to its very base (except in *Mniotiltea*), etc. The shallow notch at the end of the tongue, instead of a deeply fissured tip, distinguishes the family from the *Cærebidæ*, to some of which there is otherwise so great a resemblance. The absence of abrupt hook and notch in both mandibles separates it from such of the *Vireonidæ* as have nine primaries. To the *Tanagridæ*, through the slender-billed forms, as *Chlorospingus*, *Nemosia*, *Chlorochrysa*, etc., the relationship is very close; so much so that, by many, both families are included in one. . . .

"There is, perhaps, no family to which the relationship is closer than to the *Cærebidæ*. Of equally small size, and, to some extent, of a somewhat similar style of coloration, it is not to be wondered at that many species in each family have been indifferently assigned to either. The genus *Helminthophaga*, for instance, can scarcely be so defined as to distinguish it from *Conirostrum*, excepting by the characters of the tongue, so rarely preserved in a skin, . . . I am by no means sure that some of the species even now retained among the *Sylvicolidæ* would not be more appropriately placed in *Cærebidæ*, as *Helminthophaga bachmani*, *Parula gutturalis*, etc. . . . To the general character of the tongue in the *Sylvicolidæ*, however, that of '*Dendroica tigrina*' forms a striking exception in its approximation to the *Cærebine* character, especially that of *Certhiola*." And it remains to be seen whether various other reputed Sylvicolines do not show similar structure of the tongue, as comparatively few of the species have been examined with reference to this point.

One species of the *Cærebidæ* is found in the United States, and has been attributed, but erroneously, to the Colorado Valley: it is the following:—

Certhiola bahamensis.—Bahaman Honey-creeper.

Certhia flaveola, *β*, *L.* SN. i. 1766, 187, n. 18 *β* (from *Cates.* Car. pl. 59, and *Briss.* Orn. iii. 620, pl. 34, f. 5—this fig. however, is of the Martinique bird).

Certhia flaveola, *γ*, *Gm.* SN. i. 1788, 479, n. 18 *γ* (*Cates.* l. c. and *Penn.* AZ. ii. 285, n. 175).—*Lath.* IO. i. 1790, 297, n. 53.

Certhiola flaveola, *Bp.* CA. i. 1850, 402 (partly).—*Baird*, BNA. 1858, 924; atlas to ed. of 1860, pl. 83, f. 3 (Florida).—*Bry.* Pr. Bost. Soc. vii. 1859, 117 (Bahamas).—*Allbr.* J. f. O. 1861, 54 (the same).—*Coues*, Pr. Phila. Acad. xviii. 1866, 67 ("Arizona"—a blunder).—*Coues*, Key, 1872, 110 (Indian Key, Fla.).

Certhiola bahamensis, *Reich.* "Handb. i. 1853, 253" (from Catesby).—*Cassin*, Pr. Phila. Acad. 1864, 271.—*Baird*, Am. Nat. vii. 1873, 612 (critical).—*B. B. & R.* NAB. i. 1874, 428, pl. 19, f. 5 (Florida).—*Hensh.* List. B. Ariz. 1875, 157 (error).

Certhiola bairdi, *Cab.* J. f. O. 1865, 412 (= *C. flaveola* of Baird, 1858).

Grimpereau de Bahama, Certhia bahamensis, *Briss.* Orn. iii. 1760, 620.

Parus bahamiensis, Bahama Titmouse, *Cates.* Car. i. 1771, 59, pl. 59 (descr. orig.).

Bahama Creeper, *Penn.* AZ. ii. 1785, 285, n. 175.

Honey Creeper, *Coues*, l. c. (1872).

HAB.—Bahama Islands and coast of Florida.

diverse, other forms are observed to melt insensibly into each other; so that, taken altogether, the supposed families are inseparable. This state of the case is admitted by the best authorities, who nevertheless continue to follow usage, as I do in the present instance, partly for the sake of convenience, partly because it is not yet clear what else to do. As I remarked some years ago, "it is probable that final critical study will result in a remapping of the whole group" of these allied nine-primaried American Oscines; and I might have added, that such course is urgently demanded.

Nevertheless, it is practically an easy matter to recognize any North American example of this arbitrary group—the difficulty is with its limitation, not within its ascribed boundaries. All the "Sylvicolines" are *small* birds; excepting the species of *Icteria*, and perhaps of *Siurus*, none are over six inches long, and the mean length is even less than this. The usual or normal shape of the bill is that of an elongate compressed conoid, but its variations in details of configuration are great; in *Icteria* it is very stout and high, and in *Setophaga* broad and flat, like a Flycatcher's. The bill is usually nicked near the end, sometimes not; sometimes strongly notched and hooked, though not also toothed as in *Vireonidæ*—more as in *Tyrannidæ*. The rictus is usually bristled; sometimes not; sometimes the bristles are very highly developed, much as in *Tyrannidæ*. The wings are longer than the tail, and more or less pointed, excepting in *Geothlypis* and *Icteria*. The feet show some minor, though very evident, modifications, in adaptation to the scansorial habits of some genera, and the terrestrial habits of others.

This is the second largest family of North American birds, the *Fringillidæ* alone surpassing it in number of species. If not exactly "representative", in a technical sense, of the Old World *Sylviidæ*, it may be considered to replace that family in America, having much the same *rôle* in bird-economy: both families abound in species and individuals; they are small, migratory, insectivorous, and everywhere take prominent part in the make-up of the bird-fauna. There are upward of a hundred species of *Sylvicolidæ*, distributed over the whole of North and Middle America, and much of South America. The centre of abundance of the *Setophaginæ*, or Flycatching Warblers, is in the warmer parts of America; comparatively few species reach the United States, and only two or three are extensively dispersed in this country. On the other hand, the *Sylvicolinæ* are more particularly birds of North America; very few of

the species are confined to Middle or South America; and *Dendrœca*, the leading type of this group, is the largest, most beautiful, and most attractive genus of North American birds, preëminently characteristic of this country.

I shall be more particular in speaking of the several subdivisions of the family; but I wish to bring into this sketch of the Warblers at large some touches to show their family traits. I said that *Dendrœca* was a "beautiful" genus; and I am sure that the Warblers, taken altogether, are the most attractive of our birds to every lover of birds for their own sakes—to every one who delights in those æsthetic emotions which the interpretation of bird-life never fails to excite. We have just seen what a problem they offer to the strict scientist; the most determined utilitarian will find them not beneath his notice, for their good services in the interests of agriculture are immeasurable; the naturalist derives from them never-failing gratification of his sense of the beautiful, whether he regards their forms, their colors, or their habits. They are prominent among the birds that awaken and stimulate the enthusiasm of the young ornithologist, nor do they cease to feed the ardor of maturer years; they challenge interest perpetually, and engage attention in their endlessly varied aspects. They are the universal favorites of the amateur; every collector is keen on the scent of the "rare Warbler"; emulation quickens the quest of its nest and eggs; the rivalry is to discover some unrecorded trait, some unrecognized plumage, some note unheard before; and the specimen itself is among the treasures of every cabinet. Has any one stopped to think what our ornithology would be with this life of the woodland left out?

With few exceptions, the *Sylvicolidæ* are clad in variegated colors—always pretty and tasteful, often brilliant and strikingly effective; even when the tints are subdued, as in the olivaceous species, there is a pleasurable harmony of color, in keeping with shy and modest demeanor; while some of the Warblers may boast of the most exquisite and delicate of hues, next after those that glitter in the sheen of iridescence. Most Warblers, moreover, have several suits of color; the sexes are seldom alike, the young are different again, and so many are the changes, that here is a study by itself, to recognize the same bird under its color-variations. The plumage of the Warblers may be used to illustrate a very broad and important truth that bears upon the question of species itself. Those familiar with the subject will recall the fact that very few of our Warblers

offer any difficulty in the way of discrimination of species, when in perfect plumage; that is to say, their "specific characters" are well marked. They are also well aware, that none of our birds are more strictly and completely migratory than these; probably none of our species reside permanently in any one locality. Putting this and that together, it is easy to infer, as I think we may with entire accuracy, that the integrity of the species depends upon their migrations, for they are never continuously subjected to modifying local influences. *Migration holds species true; localization lets them slip.* That the inherent susceptibility to variation is not less in this family than elsewhere, is shown by the fact that the few localized forms respond as usual to modifying influences. Take the exotic races of *Geothlypis trichas* or *Dendrœca petechia* in instance. The Vireos, noted for the constancy of their slight though obvious specific characters, offer a parallel case. For the converse, the student may be reminded of the cases of such sedentary birds as species of *Picus* and various *Fringillidæ*, which "run into each other" from one faunal area to another.

Musical proficiency might be reasonably presupposed in a group of birds known by the delightfully suggestive name of "warblers". It is quite our own fault, however, that they are misnamed; we have simply perpetuated an early blunder in classification, by which these birds were referred to the Old World genus *Sylvia.* We have corrected the technical misnomer of "Sylvia", but have been less precise in our vernacular. Nothing less like warbling than the songs of our "warblers" can well be imagined. Bluebirds and Wrens warble or trill their lays; Warblers, as a rule, do not. There are few great singers among them all. Their voice usually is thin, sharp, "unsympathetic"; the pitch is too high; the notes are abrupt and jerky; movement is uneven and never long-sustained. The song indeed has musical quality, and may affect us rather pleasantly; but our attention is more likely to be arrested by its oddity than attracted by its melody. I cannot but criticise here; yet I am ready to bear witness to the endless variety of the songs of the Warblers,—probably every species has its own, distinctly recognizable by the practised ear; and much of the pleasurable excitement which the study of these birds affords, comes from the effort of discriminating between their wonderfully varied performances. Probably no single ornithologist has learned them all—even all those to be heard in his own

vicinity; so subtile, so fugitive, so incomprehensible are these quaint snatches of song, which arouse attention only to disappoint expectation, and make us feel that we can never interpret the language in which these sylvan sprites tell the story of their lives. But the Warblers are such a multitude, so composite, that no indiscriminate comment, however guarded, can fail to do injustice. There are singers among them. The voice of the Summer Yellowbird is sweetly modulated. The species of the genus *Siurus* are splendid performers: the Golden-crown is a musician of extraordinary yet long-unsuspected ability, so sedulously does he hide his real accomplishments—one who continually obtrudes upon us his loud shrill chant, in accelerated monotone, as if this were all that lay in his power; yet in rare moments of triumph delighting to transport us with the exquisite vocalization which his nuptial ecstasies inspire.

More anon of the general habits of the Warblers, when I come to speak of the genera and species individually; here I can do little more than witness the "various language" which they speak "to him who in the love of Nature holds communion with her visible forms". The Warblers have we always with us, all in their own good time; they come out of the South, pass on, return, and are away again, their appearance and withdrawal scarcely less than a mystery; many stay with us all summer long, and some brave the winters in our midst. Some of these slight creatures, guided by unerring instinct, travel true to the meridian in the hours of darkness, slipping past "like a thief in the night", stooping at day-break from their lofty flights to rest and recruit for the next stage of the journey. Others pass more leisurely from tree to tree, in a ceaseless tide of migration, gleaning as they go; the hardier males, in full song and plumage, lead the way for the weaker females and the yearlings. With tireless industry do the Warblers befriend the human race; their unconscious zeal plays due part in the nice adjustment of Nature's forces, helping to bring about the balance of vegetable and insect life, without which agriculture would be in vain. They visit the orchard when the apple and pear, the peach, plum, and cherry, are in bloom, seeming to revel carelessly amid the sweet-scented and delicately-tinted blossoms, but never faltering in their good work. They peer into the crevices of the bark, scrutinize each leaf, and explore the very heart of the buds, to detect, drag forth, and destroy those tiny creatures, singly insignificant, collectively a scourge,

which prey upon the hopes of the fruit-grower, and which, if undisturbed, would bring his care to nought. Some Warblers flit incessantly in the terminal foliage of the tallest trees; others hug close to the scored trunks and gnarled boughs of the forest kings; some peep from the thicket, the coppice, the impenetrable mantle of shrubbery that decks tiny water-courses, playing at hide-and-seek with all comers; others more humble still descend to the ground, where they glide with pretty mincing steps and affected turning of the head this way and that, their delicate flesh-tinted feet just stirring the layer of withered leaves with which a past season carpeted the ground. We may seek Warblers everywhere in their season; we shall find them a continual surprise; all mood and circumstance is theirs.

Naturalists have sought to divide the varied forms of the Warblers into groups; an attempt attended with no little difficulty, so varied are the phases of bird-life here exhibited. Even the earliest writers, whose genera were usually more comprehensive than our modern families are, dissociated these birds in three or more different genera, *Motacilla*, *Sylvia*, *Muscicapa*, and some others, vaguely perceiving how varied these birds are in form and habits. Later systematists have multiplied genera, as the fashion of minute subdivision dictated, though some of the newest genera, like *Dendrœca*, *Helminthophaga*, and *Setophaga*, were still allowed to contain numerous species. Professor Baird's critical studies of this group gave us four subfamilies, according to the schedule* which I subjoin

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**Bill conical, its bristles very short, or wanting.*

SYLVICOLINÆ. Bill conical, or about as high as wide, or even higher, opposite the nostrils. Gape with short bristles, not reaching beyond the nostrils, or none. Tip of bill not hooked; with or without a faint notch; commissure nearly straight. Wings long and pointed; considerably longer than the narrow, nearly even tail. Legs short and weak: tarsi not as long as the head (except in *Mniotiltœ*).

[Sections *Mniotiltœ*, or *Creeping Warblers* (genera *Mniotilta* and *Parula*); *Vermivorœ*, or *Swamp Warblers* (genera *Protonotaria*, *Helminthophaga*, and *Helmintherus*); and *Sylvicolœ*, or *Wood Warblers* (genera *Perissoglossa* and *Dendrœca*).]

GEOTHLYPINÆ. Bill much as in *Sylvicolinæ*, with distinct notch; slender, or stout, the culmen gently curved; the commissure nearly straight. Legs much developed: tarsi longer than the skull. Bristles of rictus short but appreciable. *Ground Warblers.*

[Sections *Seiurœ* (genera *Seiurus* and *Oporornis*) and *Geothlypœ* (genus *Geothlypis*).]

for the reader's convenience. Waiving the question of absolute rank in the scale of classification, we find among our North American Warblers at least three strongly marked groups, into which I divided our Warblers in the "Key"; and I shall adhere for the present to these divisions, which seem as natural as they are convenient. They only differ from those proposed by Baird in the union of his *Geothlypinæ* with *Sylvicolinæ*. One of these groups, *Icteriinæ*, is so peculiar that it has often been altogether removed from the family. Another includes the well-marked "Fly-catching Warblers"; the other covers the balance of the family. These groups, conventionally rated as subfamilies, may be thus distinguished:—

Analysis of subfamilies.

Sylvicolinæ.—Wings longer than tail (except in *Geothlypis*); bill conical, slender; commissure slightly curved, with short bristles or none. Size moderate.

Icteriinæ.—Wings shorter than tail; bill compressed, high, very stout; commissure much curved, without any bristles; size very large.

Setophaginæ.—Wings longer than tail; bill broad, flattened; commissure slightly curved, with bristles reaching far beyond the nostrils.

Subfamily SYLVICOLINÆ: True Warblers

Chars.—Bill conoid-elongate, shorter than head, about as high as, or rather higher than, wide opposite the nostrils, not hooked, and with but a slight notch, if any, at tip: commissure straight or slightly curved; a few rictal bristles, reaching little, if any, beyond the nostrils, or none. Wings pointed, longer than the narrow, nearly even tail.

This beautiful group, which comprehends the great majority of the Warblers, is specially characteristic of North America, and reaches its highest development in the eastern portions of the continent, mainly through the preponderance of species of the

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Icterianæ. Bill without notch, or rictal bristles. Culmen and commissure much curved Wings much rounded, shorter than the tail.

[Sections *Icterieæ* (genus *Icteria*) and the exotic *Teretristeæ*.]

Bill depressed; rictus with long bristles.

Setophaginæ. Bill much depressed, considerably broader than high; the tip more or less hooked, with distinct notch. Bristles lengthened, reaching half way or more from the nostrils to tip of bill. *Flycatching Warblers.*

[Genera *Myiodioctes, Cardellina,* and *Setophaga,* with their respective subdivisions.]

largest genus, *Dendræca*. All the genera and most of the species of *Sylvicolinæ* are found in this country, mainly as migrants, which appear in the spring, pass the summer, and retire for the winter to Mexico, the West Indies, and Central or even South America; though some pass the inclement season within our limits, and one at least is found in winter in Northern States.

The *Sylvicolinæ* are not very well represented in the Colorado Basin, where various genera are wanting, and the *Dendræcæ* are comparatively few; the *Helminthophagæ*, however, are proportionally numerous.

We may rapidly note some of the characteristics according to which the genera may be thrown into recognizable groups. The genus *Geothlypis*, in the first place, stands quite alone in the relative length of the wings and tail, the former being shorter than the latter: it is one of the "Ground Warblers". Intimately related is the genus *Oporornis*—so intimately, that species of the two are sometimes confounded. These genera, with *Siurus*, are somewhat terrestrial and aquatic; they have lengthened, pale-colored legs, and some of the species step very prettily over the ground, instead of hopping, or advancing both feet together, like most *Passeres*. There is another group, known as "Swamp Warblers" or "Worm-eating Warblers", consisting of the genera *Helmintherus*, *Helminthophaga*, and *Protonotaria*: in these, the bill is extremely acute, and usually unnotched, and has no rictal bristles. Two genera, *Mniotilta** and *Parula*, the first of

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***Mniotilta varia.—Black-and-white Warbler.**

Motacilla varia, *L.* SN. i. 1766, 333, n. 23 (Briss. iii. 529, pl. 27, f. 5; Sloane, ii, 309, pl. 265, f. 1).—*Gm.* SN. i. 1788, 979, n. 23.—*Turt.* SN. i. 1806, 603.

Sylvia varia, *Lath.* IO. ii. 1790, 539, n. 118.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 81.—*Nutt.* Man. i. 1832, 384.—*Thomps.* Vermont, 1853, 83.

Certhia varia, *V.* OAS. ii. 1807, 69.—*Aud.* OB. i. 1832, 452, pl. 90.—*Peab.* Rep. Orn. Mass. 1839, 340.—*Haym.* Pr. Phila. Acad. viii. 1856, 288.—*Willis*, Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).

Mniotilta varia, *V.* "Anal. 1816, 45".—*Bp.* PZS. 1837, 118 (Guatemala).—*Bp.* List, 1838, 11.—*Aud.* Syn. 1839, 71.—*Nutt.* Man. i. 2d ed. 1840, 702.—*Aud.* B A. ii. 1841, 105, pl. 114.—*Giraud*, BLI. 1844, 70.—*Gosse*, B. Jam. 1847, 134.—*Bp.* CA. i. 1850, 311.—*Lembeye*, Av. Cuba, 1850, 68, pl. 10, f. 1.—*Burnett*, Pr. Bost. Soc. iv. 1851, 116.—*Read*, Pr. Phila. Acad. vi. 1853, 401.—*Hoy*, ibid. 312.—*Woodh.* Sitgr. Rep. Zuñi R. 1853, 69.—*Scl.* PZS. 1855, 143 (Bogotá).—*Gundl.* J. f. O. 1855, 475 (Cuba).—*Pratten*, Tr. Ill. Agr. Soc. i. 1855, 603.—*Putn.* Pr. Ess. Inst. i. 1856, 208.—*Brew.* Pr. Bost. Soc. vi. 1856, 6.—*Scl.* PZS. 1856, 140 (Chiriqui); 291 (Mexico).—*Bry.* Pr. Bost. Soc. vi. 1857. 116 (Nova Scotia).—*Maxim.* J. f. O. vi. 1858, 108.—*Bd.* BNA. 1858, 235.—*A. & E. Newt.* Ibis, i. 1859, 143 (St. Croix).—*Scl.* PZS. 1859, 363 (Xalapa); 373 (Oaxaca).—*Martens*, J. f. O. 1859, 213 (Bermudas).—*Bland*, Smiths. Rep. for 1858, 1859, 287 (Bermudas).—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Cab.* J. f. O. 1860, 328 (Costa Rica).—*Brew.* Pr. Bost. Soc. vii. 1860, 306 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 322 (New Grenada).—*Scl.* PZS. 1861, 70 (Jamaica).—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Albrecht*, J. f. O. 1861, 52 (Bahamas).—*Albr.* J. f. O. 1862, 193 (Jamaica).—*Boardm.* Pr. Bost. Soc. ix. 1862, 124.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 159 (Dakota).—*Verr.* Pr. Ess. Inst. iii.

which is not known to occur in the Colorado Basin, are "Creeping Warblers", showing certain slight peculiarities of the feet which adapt them (at least one of them) to a mode of life quite like

1862, 146.—*March*, Pr. Phila. Acad. xv. 1863, 293 (Jamaica).—*Bd.* Rev. AB. 1864, 167.—*Scl.* PZS. 1864, 172 (City of Mexico); 349 (Panama).—*Allen*, Pr. Ess. Inst. iv. 1864, 59.—*Lawr.* Ann. Lyc. N. Y. viii. 1865, 174 (Chiriqui).—*Dress.* Ibis, 2d ser. i. 1865, 476 (Texas, breeding).—*McIlwr.* Pr. Ess. Inst. v. 1866, 85.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*Salv.* PZS. 1867, 135 (Veragua).—*Trippe*, Am. Nat. ii. 1868, 171.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 93 (Costa Rica).—*Coues*, Pr. Ess. Inst. v. 1868, 269.—*Coues*, Pr. Bost. Soc. xii. 1868, 108.—*Allen*, Am. Nat. iii. 1869, 509.—*Haymond*, Geol. Surv. Indiana, 1869, 216.—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.—*v. Frantz.* J. f. O. 1869, 292 (Costa Rica).—*S. & S.* PZS. 1870, 780 (Merida).—*Cope*, Am. Nat. iv. 1870, 395, 396, 399.—*Parker*, Am. Nat. v. 1871, 168.—*Trippe*, Pr. Ess. Inst. vi. 1871, 114.—*Wyatt*, Ibis, 3d ser. i. 1871, 322 (Herradura).—*Allen*, Am. Nat. vi. 1872, 265.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 361.—*Scott*, Pr. Bost. Soc. xv. 1872, 221 (West Virginia, breeding).—*Gundl.* J. f. O. 1872, 411 (Cuba).—*Allen*, Bull. MCZ. iii. 1872, 175.—*Coues*, Key, 1872, 92, f. 35.—*Snow*, B. Kans. 1873, 4.—*Ridg.* Am. Nat. vii. 1873, 607.—*Trippe*, Pr. Bost. Soc. xv. 1873, 234.—*Herrick*, Bull. Ess. Inst. v. 1873, — (New Brunswick).—*Coues* BNW. 1874, 45.—*Merr.* Am. Nat. viii. 1874, 7, 86.—*Packard*, ibid. 271.—*Allen.* Pr. Bost. Soc. xvii. 1874, 52 (Dakota).—*B. B. & R.* NAB. i. 1874, 180, pl. 10, f. 6.—*Ames*, Bull. Minnesota Acad. 1874, 55.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Lawr.* Bull. U. S. Nat. Mus. 1876, 15 (Tehuantepec).—*Gentry*, Life-Hist. i. 1876, 91.—*Minot*, B. N. Eng. 1877, 97.

Mniotilla varia, *V.* "EM. 1823, — ".—*Less.* Tr. Orn. 1831, 318.—*V.* Gal. Ois. i. 1834, 276, pl. 169.—*Scl.* PZS. 1858, 298 (Parada).—*Brewster*, Ann. Lyc. N. Y. xi. 1875, 134.

Minotilta varia, *S. & S.* Ibis, i. 1859, 10 (Guatemala).

Miniotilta vara, *Gregg*, Proc. Elmira Acad. 1870.

Sylvicola varia, Rich. "List, 1837".—*Bry.* Pr. Bost. Soc. xi. 1867, 91 (St. Domingo).

Nectarinia varia, *Hahn*, "Ausländ. Vög. . . . ".

Certhia picta, *Bartr.* Trav. Fla. 1st ed. 1791, 289 bis (see *Coues*, Pr. Phila. Acad. 1875, 347).

Certhia maculata, *Wils.* AO. iii. 1811, 22, pl. 19, f. 3.—*Bp.* Journ. Phila. Acad. iv. 1824, 27.—*Denny*, PZS. 1847, 39.

Oxyglossus maculatus, *Sw.* Zool. Journ. iii. 1827, 357 (type of the genus).

Mniotilta borealis, *Nutt.* Man. i. 2d ed. 1840, 705.—*Hoy*, Pr. Phila. Acad. vi. 1853, 312.

Mniotilta varia *var.* **longirostris,** *Bd.* BNA. 1858, p. xxxi, n. 167.

Ficedula dominicensis varia, Figuier varié de S. Domingue, *Briss.* Orn. iii. 1760, 529, n. 69, pl. 27, f. 5.

Figuier varié de St. Domingue, *Buff.* "Hist. Nat. Ois. v. 305".

Black and White Creeper, *Edw.* "Glean. pl. 300".

White-poll Warbler, *Penn.* A.Z. ii. 1785, n. 402, 293.—*Lath.* Syn. ii. pt. ii. 1783, 488, n. 114.

Small Black and White Bird, *Sloane*, "Jam. ii. 309, pl. 265, f. 1".

Mniotilte varié, *V.* l. c.

Grimpereau varié, *V.* "Ois. Dor. ii. —, 111, pl. 74".

Creeping Warbler, Northern Creeping Warbler, *Nuttall*, ll. cc.

Black-and-white Warbler, Black-and-white creeping Warbler, Black-and-white Creeper, *Authors.*

FIG. 29.—Black-and-white Creeper.

HAB.—Eastern North America. West to Dakota (*Hayden*, *Allen*), but not, as far as known, to the Rocky Mountains, in any portion of the United States. North to the Fur Countries. South through Mexico, various West India Islands, and Central America, to New Grenada at least. Not observed on the Pacific side north of Mazatlan. Breeds throughout its North American range. Winters from the southern border of the United States to the limit of its distribution.

that of the true Creepers. The remaining genera are "Wood Warblers", chiefly represented by *Dendræca*, from which *Perissoglossa* and *Peucedramus* have been successively detached, on the ground of certain peculiarities of the tongue and bill, and some other features. In their special habits, song, food, and mode of nesting, the *Sylvicolinæ* differ among themselves to such a degree that it is scarcely possible here to go into further details. I must refer to the several histories of the species, upon which we are now prepared to enter. The descriptions and biographies will be confined to the species inhabiting the Colorado Basin; but I shall take note of all the North American species, giving synonymy and habitat.

Genus PARULA Bonaparte

Chloris, *Bo'e*, Isis, 1826, 927. (Not of *Möhr.* Gen. Av. 1752, 51. Type *Parus americanus* L.)

Sylvicola, *Sw.* Zool. Journ. iii. 1827, 169. (Not of *Humph.* Mus. Calon. 1797, 60. Type *Sylvia pusilla* Wils.)

Parula, *Bp.* C. & G. L. 1838, 20. (Type *Parus americanus* L.)

Compsothlypis, *Cab.* Mus. Hein. i. 1850, 20 (same type).

Ficedula, *Des Murs*, "—, 1853, —" (fide Gray; nec auct.).

This generic name, based upon *Parus americanus* of Linnæus, and latterly restricted to include only species having the same pattern of coloration as the bird just named, is now employed to designate a group of Warblers considered by Baird to be most nearly related to *Mniotilta*, all of which have the upper parts bluish, with a yellowish patch on the back, and the under parts more or less yellow. The tail-feathers have white spots, as in *Dendræca*. The bill is very short, quite stout, acutely conical, and notched near the tip. The rictus is evidently furnished with bristles, though these are few and short. The hind toe is decidedly longer than its claw, and the anterior toes are rather more than usually connate at the base. The tarsus is longer than the middle toe and claw. The lateral claws are of unequal lengths. But the structural peculiarities are very slight, and the species are easiest recognized by the pattern of coloration and the very small size—five inches in length, or less.

If the group is considered worth retaining, its proper name is uncertain. *Chloris* was used by Möhring in 1752 for a different group; but if his genera are to be rejected as pre-Linnæan, the employ of *Chloris* by Boie in 1826 may require to be endorsed. *Sylvicola* of Swainson, 1827, whether applying exclusively here or not, is clearly antedated in zoölogy by *Sylvicola* of Humphreys, 1797. *Parula* of Bonaparte, 1838, if acceptable without diagnosis, is antedated by *Parulus* of Spix, "Av. Bras. i. 1824,

85". Cabanis, in proposing *Compsothlypis* in 1850, defends it on the ground that „die früheren Namen dieser Gruppe sind bereits anderweitig vergeben"—that all the earlier names are preoccupied. Baird does not see why *Chloris* is not tenable.

To the species long known as the only one of the United States, I recently had the pleasure of adding another, discovered in Texas, and then new to science.*

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* **Parula nigrilora.—Sennett's Warbler.**

♂ *Subcærulea, dorso medio virenti-flavo, alis albo-bifasciatis, palpebris nigris immaculatis, loris lineâque frontali nigerrimis; subtus flava, jugulo aurantiaco, abdomine infimo, hypochondriis crissoque albis.*

♂ adult: Upper parts of the same ashy-blue color as in *P. americana*, with a dorsal patch of greenish-yellow exactly as in that species. Wings also as in *americana*, dusky, with grayish-blue outer, and whitish inner, edgings, and crossed by two conspicuous white bars, across tips of greater and middle coverts. Tail as in *americana*, but the white spots smaller and almost restricted to two outer feathers on each side. Eyelids black without white marks. Lores broadly and intensely black, this color extending as a narrow frontal line to meet its fellow across base of culmen, and also reaching back to invade the auriculars, on which it shades through dusky to the general bluish. Under parts yellow as far as the middle of the belly, and a little farther on the flanks, and also spreading up the sides of the jaw to involve part of the mandibular and malar region; on the fore breast deepening into rich orange, but showing nothing of the orange-chestnut and blackish of *P. americana*. Lower belly, flanks and crissum, white. Bill black above, yellow below. Legs undefinable light horn color. Length (of skins, about) 4.50; wing 2.00–2.20; tail 1.80–1.90; bill from nostril 0.38–0.40; tarsus 0.62–0.65; middle toe alone 0.40. (Extremes of three adult males.)

Habitat:—Texas, and doubtless Mexico (Hidalgo, Texas), G. B. Sennett, Apr.–May, 1877, Nos. 248 (type), 343, 396.

This bird is entirely distinct from *P. americana*, and belongs to the *pitiayumi* type. From *americana* it is distinguished by the extension of the yellow to the middle belly and flanks, absence of the decided blackish collar, lack of white on eyelids, and broadly black lores involving auriculars and frontal stripe. The upper parts, wings, and tail are substantially as in *americana*, the tint of the upper parts, shape and color of the dorsal patch, and the white wing-bars being the same in both. From *P. inornata* Baird it differs in the presence of the wing-bands and color of the upper parts, *inornata* being a deep blue species with plain wings. From *pitiayumi* it differs in the much lighter colored upper parts, and less of the yellow below, *pitiayumi* having a deep plumbeous-blue back and the yellow extending to the crissum. The relationships are closest to *P. insularis*, agreeing in having the lower abdomen and flanks white, like the crissum, instead of yellow like the breast, as is the case both with *inornata* and *pitiayumi*. The differences from *insularis*, however, are readily expressed; the lores being decidedly black, and broadly contrasting with the bluish-gray, as in *pitiayumi* and *inornata*, and the wing-bands being as broad and distinct as they are in *americana*, instead of narrow as in *insularis*, and the yellow of the throat extending on the malar region, while in *insularis* the yellow is strictly confined between the sides of the jaw.

Blue Yellow-backed Warbler

Parula americana

Parus americanus, *L.* SN. i. 10th ed. 1758, 190, n. 3 (Cates. i. 64); 12th ed. 1766, 341, n. 4.—*Gm.* SN. i. 1788, 1007, n. 4 (Briss. iii. 522; Buff. v. 301; PE. 731, f. 1).—*Turt.* SN. i. 1806, 622.—*Lath.* IO. ii. 1790, 571, n. 28.

Motacilla americana, *Gm.* SN. i. 1788, 960, n. 75 (Lath. Syn. ii. pt. ii. 440, n. 36).—*Turt.* SN. i. 1806, 590.

Sylvia americana, *Lath.* IO. ii. 1790, 520, n. 40.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 83.—*Aud.* OB. i. 1832, 78, pl. 15.—*Peab.* Rep. Orn. Mass. 1839, 11.—*D'Orb.* Ois. Cuba, 1839, 67.—*Thomps.* Verm. 1853, app. 24.

Sylvicola americana, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, —.—*Aud.* Syn. 1839, 59.—*Aud.* BA. ii. 1841, 57, pl. 91.—*Denny,* PZS. 1847, 38.—*Woodh.* Sitgr. Rep. Zuñi, 1853, 71.—*Hoy,* Pr. Phila. Acad. vi. 1853, 311.—*Read,* ibid. 399—*Pratten,* Tr. Illinois Agr. Soc. 1855, 602.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Sel.* PZS. 1857, 202 (Tlacotalpam, Vera Cruz).—*Max.* J. f. O. vi. 1858, 116.—*Martens,* J. f. O. 1859, 213 (Bermudas).—*Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Bland,* ibid. 287 (Bermudas).—*Brew.* Pr. Bost Soc. vii. 1860, 307 (Cuba).—*Hoy,* Smiths. Rep. for 1864, 1865, 438 (Missouri).—*Bry.* Pr. Bost. Soc. x. 1856, 251 (Porto Rico).—*Bry.* J. f. O. 1866, 184 (the same).—*Trippe,* Pr. Ess. Inst. vi. 1871, 114 (Minnesota).

Parula americana, *Bp.* CGL. 1838, 20.—*Gosse,* B. Jam. 1847, 154.—*Bp.* CA. i. 1850, 310.—*Bd.* BNA. 1838, 238.—*S. & S.* Ibis, i. 1859, 10 (Guatemala).—*A. & E. Newt.* Ibis, i. 1859, 143 (St. Croix).—*Cass.* Pr. Phila. Acad. xii. 1860, 376 (St. Thomas Island).—*Scl.* PZS. 1861, 70 (Jamaica).—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 405.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 159.—*Verr.* Pr. Ess. Inst. iii. 1862, 192.—*Albrecht,* J. f. O. 1862, 192 (Jamaica).—*March,* Pr. Phila. Acad. xv. 1863, 293 (Jamaica).—*Verr.* Pr. Bost. Soc. ix. 1863, 233 (Maine).—*Allen,* Pr. Ess. Inst. iv. 1864, 59.—*Bd.* Rev. AB. 1865, 169.—*Dress.* Ibis, 2d ser. i. 1865, 476 (San Antonio, Tex.).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*McIlwr.* Pr. Ess. Inst. v. 1866, 85.—*Brew.* Am. Nat. i. 1867, 117.—*Trippe,* Am. Nat. ii. 1868, 177.—*Coues,* Am. Nat. ii. 1868, 161.—*Coues,* Pr. Bost. Soc. xii. 1868, 108.—*Coues,* Pr. Ess. Inst. v. 1868, 269.—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200 (Yucatan).—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.—*Cope,* Am. Nat. iv. 1870, 395, 396, 397.—*Coues,* Pr. Phila. Acad. xxiii. 1871, 20.—*Allen,* Bull. MCZ. ii. 1871, 267 (Florida, wintering).—*Allen,* Bull. MCZ. iii. 1872, 124, 175 (Kansas, &c.).—*Allen,* Am. Nat. vi. 1872, 265.—*Scott,* Pr. Bost. Soc. xv. 1872, 221 (West Virginia, in summer).—*Aiken,* Pr. Bost. Soc. xv. 1872, 196 (Colorado).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 361.—*Gundl.* J. f. O. 1872, 411 (Cuba).—*Coues,* Key, 1872, 92.—*Trippe,* Pr. Bost Soc. xv. 1873, 234.—*Herrick,* Bull. Ess. Inst. v. 1873, — (New Brunswick).—*Ridg.* Bull. Ess. Inst. v. 1873, 180 (Colorado).—*Merr.* Am. Nat. viii. 1874, 86.—*Packard,* Am. Nat. viii. 1874, 271.—*Coues,* BNW. 1874, 46.—*Ames,* Bull. Minnesota Acad. 1874, 55.—*B. B. & R.* NAB. i. 1874, 208, figs. pl. 10, f. 7.—*Brewster,* Ann. Lyc. N. Y. i. 1875, 134 (Virginia, probably breeding).—*Newton,* Birds of Greenland, 1875?, 98 (one specimen from the Southern Inspectorate in 1857).—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Gentry,* Life-Hist. 1876, 94.—*Lawr.* Bull. Nat. Mus. no. 4, 1876, 15 (Tehuantepec).—*Deane,* Bull. Nuttall Club, i. 1876, 21 (albinotic).—*Minot,* B. N. Engl. 1877, 99.

Agreeably to the latest fashion, the bird will probably stand as *pitiayumi* var. *nigrilora;* but its probable gradation into *pitiayumi* through Mexican and Central American specimens remains to be shown. It is thoroughly distinct from *P. americana.*

This welcome and unexpected addition to our fauna was made by my esteemed correspondent, Mr. George B. Sennett, during his collecting tour in Texas in the spring of 1877, when other novelties and many interesting points were brought to light through his diligent and successful enterprise. Mr. Sennett secured three adult males at Hidalgo, Texas, some seventy miles from Fort Brown, during the months of April and May.

Compsothlypis americana, *Cab.* MH. i. 1850, 20.- *Gundl.* J. f. O. 1855, 476 (Cuba).
Mniotilta americana, *Gray,* G. of B. i. 1848, 196.—*Reinh.* Ibis, iii. 1861, 6 (Greenland).
Motacilla eques, *Bodd.* Tabl. PE. 1783, 46 (PE. 731, f. 1).
Motacilla ludoviciana, *Gm.* SN. i. 1788, 983, n. 148 (Briss. iii. 500, n. 55, pl. 26, f. 4; *Buff.* "v. 288"; *Penn.* AZ. ii. 407, n. 303).—*Turt.* SN. i. 1806, 605.—*Less.* Tr. Orn. 1831, 418.
Sylvia ludoviciana, *Lath.* IO. ii. 1790, 535, n. 105.—*Steph.* Shaw's Gen. Zool. x. 1817, 713.
Sylvia torquata, *V.* OAS. ii. 1807, 38, pl. 99.—*V.* Ency. Méth. ii. 1823, 438, n. 67.
Thriothurus torquatus, *Steph.* Shaw's Gen. Zool. xiv. 1826, 194.
Sylvia pusilla, *Wils.* AO. iv. 1811, 17, pl. 28, f. 3.—*Gosse,* Alabama, 1859, 295.
Sylvicola pusilla, *Sw.* Zool. Journ. iii. 1827, 169 (type of the genus); Cl. B. ii. 1837, 245.
Ficedula ludoviciana, *Briss.* Orn. iii. 1760, 500, n. 55, pl. 26, f. 4.
Louisiane Warbler, *Lath.* Syn. ii. pt. ii. 1783, 480, n. 101.—*Penn.* AZ. ii. 1785, 407, n. 303.
Parus fringillaris, Finch-Creeper, *Cates.* Car. i. 1771, 64, pl. 64.
Parus varius, *Bartr.* Trav. Fla. 1791, 292.
Creeping Titmouse, *Penn.* AZ. ii. 1785, 423, n. 326.—*Lath.* Syn. ii. pt. ii. 1783, 558, n. 27.
Yellow-backed Warbler, *Lath.* Syn. ii. pt. ii. 1783, 440, n. 36.
Ficedula carolinensis cinerea, *Briss.* Orn. iii. 1760, 522, n. 66.
Figuier cendré à collier, *Buff.* "Hist. Nat. Ois. v. 301" (PE. 731, f. 1).
Figuier cendré, de la Caroline, *Buff.* PE. 731, f. 1.
Fauvette à collier, *V.* Ency. Méth. ii. 1823, 438.—*Le M.* Ois. Canad. 1861, 201.
Particolored Warbler, Blue Yellow-backed Warbler, *Authors.*

Hab.—Eastern North America. West to Nebraska (*Hayden*), and even to the eastern foothills of the Rocky Mountains in Colorado (*Aiken*); hence probably to be hereafter detected in the Colorado Basin. North regularly to British America (New Brunswick, Nova Scotia, &c.); casually to Greenland (*auct. Reinhardt, Newton*). South through various West India Islands and Mexico to Guatemala at least. Breeds chiefly in the northerly portion of its range, but perhaps in the greater part of the United States (Illinois, Virginia, New Jersey, &c.). Winters from Florida southward.

Ch. sp.—♂ *Subcærulea, dorso medio virenti-flavo, palpebris albo maculatis, alis albo bifasciatis, caudâ albo maculatâ, loris nigricantibus; subtus alba, jugulo et pectore flavis, spatio pectorali obscuriore; maxillâ nigrâ, mandibulâ subflavâ aut albidâ. Long. tot.* 4½–4¾; *alæ* 2⅓; *caudæ* 1¾. ♀ *coloribus minus vegetis; juv. dorso toto virescente, etc.*

♂, in spring: Upper parts clear ashy-blue, the middle of the back with a triangular patch of greenish-yellow or brownish-golden. Lores dusky. A white spot on each eyelid. Wings blackish, crossed on the ends of the greater and middle coverts with two broad white bars; the primaries narrowly, the secondaries more broadly, edged externally with the color of the back, and internally with white. Tail like the wings, with much edging of the outer webs like the back, the middle feathers being mostly bluish; at least two outer feathers on each side with large, white, squarish patches on the inner web near the end, usually the third feather blotched with white, and a white touch on the fourth and even the fifth feather. Chin and throat yellow, rather narrowly confined, this yellow spreading over the whole breast, but much of the breast spotted or tinged with orange-brown, and the jugulum showing even a decided blackish collar. The coloration of this part is very variable; sometimes, in addition to the colors mentioned, reddish-brown markings occur in the white along the sides, much as in the Chestnut-sided Warbler. Rest of under parts white. Bill above black;

below whitish or flesh-colored, drying yellowish. Length, 4½-4¾; extent about 7¾; wing, 2¾; tail, 1⅞.

♀, in spring, like the male, the upper parts less brightly bluish, sometimes with a slight greenish gloss, the back-patch not so well defined; less white on the tail, the white wing-bands narrower, and the dark or reddish tinting of the fore breast less decided or scarcely indicated, the yellow itself being more restricted.

Young of either sex in the fall have the bluish of the upper parts glossed over with greenish, sometimes to such extent as to obscure the dorsal patch, which is then not very different from the rest of the upper parts. White tail-spots smaller, generally confined to two outer feathers on each side. White wing-bands narrower. Edging of tail and wings tinged with greenish, like the back. Eyelids not spotted with white. Yellow of fore under parts pale, with little or no indication of the dusky across the jugulum. White of the under parts tinged with yellowish posteriorly, and frequently showing brownish touches along the sides. From the latter fact I am disposed to think that the highest spring plumage of the males is not that with the most golden-brown in the yellow of the breast and with the reddish along the sides, but that in which the heavier coloration is condensed into the blackish jugular collar, leaving the rest of the yellow intact.

Genus HELMINTHOPHAGA Cabanis

The birds of this genus are distinguished among the Warblers for the acuteness and attenuation of the bill, together with the straightness of its several outlines, the entire absence of notch near the tip, and lack of bristles at base. The wings are long and pointed, in one species nearly half as long again as the tail, which is even or slightly emarginate, narrow, and rather short. The tarsi are longer than the middle toe. The genus comprehends the "Worm-eating" or "Swamp" Warblers, and is very closely related to both *Protonotaria* and *Helmintherus*: species of all three were formerly included in the genus *Vermivora* or *Helinaia* of authors. *Protonotaria** is

*__Protonotaria citrea.—Prothonotary Warbler.__

Motacilla citrea, *Bodd.* Tabl. PE. 1783, 44 (PE. 704, f. 2).

Mniotilta citrea, *Gray,* G. of B. i. 1848, 196 (after Boddaert).

Protonotaria citrea, *Bd.* BNA. 1858, 239.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 363.—*Gundl.* J. f. O. 1861, 324 (Cuba).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 406 (Washington, D. C.).—*Barn.* Smiths. Rep. for 1860, 1861, 435 (Pennsylvania).—*Gundl.* J. f. O. 1862, 178 (Cuba).—*Verr.* Pr. Bost. Soc. ix. 1863, 233 (Maine).—*Bd.* Rev. AB. 1864, 173.—*Coues,* Pr. Bost. Soc. xii. 1868, 108 (South Carolina).—*Coues,* Pr. Ess. Inst. v. 1868, 269 ("New England", *Verr.*).—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica); ibid. 1869, 200 (Yucatan).—*Turnb.* B. E. Pa. 1869, 53; Phila. ed. 42.—*v. Frantz.* J. f. O. 1869, 292 (Costa Rica).—*S. & S.* PZS. 1870, 780 (Merida).—*Gundl.* J. f. O. 1872, 411 (Cuba).—*Ridgw.* Am. Nat. viii. 1874, 199.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 367 (Illinois, abundant).—*Snow,* B. Kans. 1873, 4 (Neosho Falls, Kans.).—*B. B. & R.* NAB. i. 1874, 184, figs., pl. 10, f. 8.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439 (New England).

Protonotaria citræa, *Coues,* Key, 1872, 93, f. 36.—*Coues,* BNW. 1874, 47.—*Merr.* Am. Nat. viii. 1874, 87.—*Nelson,* Bull. Nutt. Orn. Club, i. 1876, 42 (Illinois).—*Minot,* B. N. Engl.

Helminthophaga citrea, *Cab.* J. f. O. 1861, 85 (Costa Rica). [1877, 90.

characterized by its much larger, less acute bill, which nearly equals the head in length, is slightly notched at the tip, and has a few rictal bristles; the tarsi are about equal to the middle toe and claw; the very long, pointed wings exceed the tail by an inch, and the tail is slightly graduated. The system of coloration is peculiar, resulting in one of the handsomest of the Warblers, the whole head and under parts being intense golden-yellow, shading on the back through olive to bluish-ash. There is but one species, inhabiting the Eastern United States, and, unlike the *Helminthophagæ*, nesting in holes. The genus *Helmintherus** is even nearer *Helminthophaga*, having an entirely

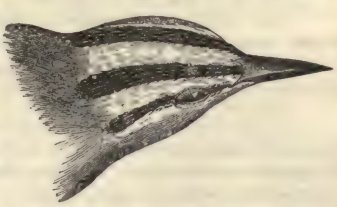

FIG. 30.—Worm-eating Warbler.

Motacilla protonotarius, *Gm.* SN. i. 1788, 972, n. 111.—*Turt.* SN. i. 1806, 598.—*Less.* Tr. Orn. 1831, 418.

Sylvia protonotarius, *Lath.* IO. ii. 1790, 542, n. 128.—*V.* OAS. ii. 1807, 27, pl. 83.—*Wils.* AO. iii. 1811, 72, pl. 24, f. 3.—*Bp.* Journ. Phila. Acad. iv. 1824, 195.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 86.—*Nutt.* Man. i. 1832, 410.—*Aud.* OB. i. 1832, 22; v. 1839, 460, pl. 3 (*Dacnis* on pl.).

Sylvicola protonotaria, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 171.

Vermivora protonotarius, *Bp.* CGL. 1838, 21.—*Woodh.* Sitgr. Rep. Zuñi, 1853, 72.—*Hoy,* Smiths. Rep. for 1864, 1865, 438 (Missouri).

Helinaia protonotarius, *Aud.* Syn. 1839, 67.—*Aud.* BA. ii. 1841, 89, pl. 106.—*Pratten,* Tr. Illinois Agric. Soc. i. 1855, 602.

Helmitheros protonotarius, *Bp.* CA. i. 1850, 314.

Helminthophaga protonotarius, *Cab.* MH. i. 1850, 20.

Motacilla auricollis, *Gm.* SN. i. 1788, 984, n. 150 (*Briss.* iii. 508, n. 59, pl. 26, f. 1; *Buff.* v. 290; *Penn.* ii. 408).—*Turt.* SN. i. 1806, 606.

Sylvia auricollis, *Lath.* IO. ii. 1790, 536, n. 107 (*Buff.* v. 290).—*V.* Ency. Méth. ii. 1823, 447, n. 99.—*Nutt.* Man. i. 1832, 380.—*Peab.* Rep. Orn. Mass. 1839, 309.—*Linsl.* Am. Journ. Sci. xliv. 1843, 257 (see *Merr.* Trans. Conn. Acad. iv. 1877, 147).

Sylvicola auricollis, *Nutt.* "Man. i. 2d ed. 1840, 431".

Mniotilta auricollis, *Gray,* G. of B. i. 1848, 196.

Orange-throat Warbler, *Penn.* AZ. ii. 1785, 408, n. 304.

Orange-throated Warbler, *Lath.* Syn. ii. pt. ii. 1783, 481, n. 103 ("Canada").

Grand Figuier de Canada, Ficedula canadensis major, *Briss.* Orn. iii. 1760, 508, n. 59, [pl. 26, f. 1.

Figuier Protonotaire, *Buff.* "ix. 465", *or* "v. 316", *or* "vi. 191".

Fauvette protonotaire, Sylvia protonotaria, *V.* N. D. d'H. N. xi. 1817, 211, pl. D 22, f. 2.

Figuier à gorge orangée, *Buff.* "v. 290".

Figuier à ventre et tête jaunes de la Louisiane, *Buff.* PE. 704, f. 2.

Fauvette à gorge orangée, *V.* Ency. Méth. ii. 1823, 447.

Prothonotary Warbler, *Penn.* AZ. ii. 1785, 410, n. 310.—*Lath.* Syn. ii. pt. ii. 1783, 494, n. 123.

Prothonotary Warbler, Prothonotary Swamp Warbler, Golden Swamp Warbler, *Authors.*

HAB.—Eastern United States, rather southerly. North casually to Maine and New Brunswick. West to Missouri, Kansas, Indian Territory, and Texas. Cuba (the only West Indian record). Apparently not noted in Mexico. South to Panama. Has been found breeding abundantly in Illinois and Kansas. Rare or casual in all Eastern and Middle States. Not known to winter in the United States.

***Helmintherus vermivorus.—Worm-eating Warbler.**

Motacilla vermivora, *Gm.* SN. i. 1788, 951, n. 55 (Edw. pl. 305, &c.).—*Turt.* SN. i. 1806, 585.

Sylvia vermivora, *Lath.* IO. ii. 1790, 544, n. 138.—*Wils.* AO. iii. 1811, 74, pl. 24, f. 4.—*V*

unnotched bill; it differs chiefly in the less acuteness and greater robustness of the bill, which in one species mounts high

N. D. d'H. N. 2d ed. xi. 1817, 278.—*V.* Ency. Méth. ii. 1823, 480, n. 105.—*Bp.* Journ. Phila. Acad. iv. 1824, 196.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 86.—*Nutt.* Man. i. 1832, 409.—*Aud.* OB. i. 1832, 177; v. 1839, 460, pl. 34.—*Peab.* Rep. Orn. Mass. 1839, 312.—*Linsley*, "Am. Journ. Sci. xliv. 1843, —" (Conn.).—*Thomps.* NH. Vermont, 1853, 83.

Dacnis vermivora, *Aud.* "name on pl. 34".

Sylvicola vermivora, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 171.

Helinaia vermivora, *Aud.* Syn. 1839, 66.—*Aud.* BA. ii. 1841, 86, pl. 105.—*Lembeye*, Av. Cuba, 1850, 35, pl. 6, f. 4.—*Pratten*, Tr. Illinois Agric. Soc. for 1854, 1855, 602.—*Putn.* Pr. Ess. Inst. i. 1856, 227.—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).

Mniotilta vermivora, *Gray*, G. of B. i. 1848, 196.

Hylophilus vermivora, *Temm.* "Tabl. Méth. 36" (quoted from Giebel).

Helmitheros vermivora, *Bp.* CA. i. 1850, 314.

Helmitheros vermivorus, *Cab.* MH. i. 1850, 20.—*Gundl.* J. f. O. 1855, 476 (Cuba).—*Scl.* PZS. 1859, 363 (Xalapa).—*Cab.* JfO. 1860, 328 (Costa Rica).—*Gundl.* JfO. 1861, 326, 409 (Cuba).

Helmitherus vermivorus, *Bd.* BNA. 1858, 252.—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*Wheat.* Ohio Agr. Rep. for 1860, 1861, 363.—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Coues & Prent.* Smiths. Rep. for 1861, 406 (Washington, summer).—*Verr.* Pr. Ess. Inst. iii. 1862, 156.—*Allen*, Pr. Ess. Inst. iv. 1864, 82.—*Bd.* Rev. AB. 1865, 179.—*Lawr.* Ann. Lyc. viii. 1866, 284.—*Salv.* PZS. 1867, 135 (Veragua).—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Coues*, Pr. Ess. Inst. v. 1868, 270.—*Coues*, Pr. Bost. Soc. xii. 1868, 109. *Trippe*, Am. Nat. ii. 1868, 178.—*Allen*, Am. Nat. iii. 1869, 576.—*Jackson*, Am. Nat. iii. 1869, 556.—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200 (Yucatan).—*Sumich.* Mem. Bost. Soc. i. 1869, 546 (Orizaba).—*Gregg*, Pr. Elmira Acad. 1870 (Chemung Co., N. Y.).—*Abbott*, Am. Nat. iv. 1870, 543.—*Gundl.* J. f. O. 1872, 412 (Cuba).—*Scott*, Pr. Bost. Soc. xv. 1872, 221 (West Va., breeding).—*Coues*, Key, 1872, 93, f. 37.—*Purdie*, Am. Nat. vii. 1873, 692.—*Mayn.* B. Fla. 1873, 45 (wintering).—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 368 (Illinois).—*Snow*, Am. Nat. viii. 1874, 757.—*Coues*, BNW. 1874, 48.—*B. B. & R.* NAB. i. 1874, 187, figs. pl. 10, f. 10.—*Brewster*, Ann. Lyc. N. Y. xi. 1875, 134 (Virginia; habits).—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Gentry*, Life-Hist. 1876, 97.—*Minot*, B. N. Engl. 1877, 89.—*Purdie*, Bull. Nutt. Club, ii. 1877, 21 (Connecticut).—*Merr.* Trans. Conn. Acad. iv. 1877, 12 (Connecticut).

Helmintherus vermivorus, *v. Frantz.* J. f. O. 1869, 293 (Costa Rica).

Helmitherus migratorius, *Raf.* "Jrn. de Phys. lxviii, 1819, 417".—*Hartl.* "RZ. 1845, 342".

Vermivora pennsylvanica, "*Sw.*"—*Bp.* List, 1838, 20.—*Gosse*, B. Jam. 1847, 150.—*Hoy*, Pr. Phila. Acad. 1853, 212.—*Albrecht*, J. f. O. 1862, 194, 201 (Jamaica).—*March*, Pr. Phila. Acad. 1863, 293 (Jamaica).—*Hoy*, Smiths. Rep. for 1864, 1865, 438 (Missouri).

Vermivora fulvicapilla, *Sw.* Class. Birds, ii. 1837, 245, f. 213 *g*.

Worm-eater Warbler, *Penn.* AZ. ii. 1785, 406, n. 300.

Figuier de Pensilvanie, Ficedula pensilvanica, *Briss.* Orn. vi. 1760, App. 102, n. 76.

Worm-eater, *Edw.* Glean. pt. ii. 200, pl. 305.—*Lath.* Syn. ii. pt. ii. 1783, 499, n. 133.

Demi-fin Mangeur de vers, *Buff.* "v. 325".

Pitpit vermivore, *V.* N. D. d'H. N. xi. 1817, 278.—*V.* Ency. Méth. ii. 1823, 480.

Worm-eating Warbler, Worm-eating Swamp Warbler, *Authors.*

HAB.—Eastern United States. West to Missouri, Kansas, and Indian Territory. North regularly to the Middle States, frequently to New England in the Connecticut Valley, casually to Maine. In winter, Florida, Cuba, Jamaica, Eastern Mexico, and Central America. Known to breed in most of its United States range, and probably does so throughout.

Helmintherus swainsoni.—Swainson's Warbler.

Sylvia swainsonii, *Aud.* OB. ii. 1834, 563, pl. 198.—*Peab.* Rep. Orn. Mass. 1839, 313 (wrong).

Sylvicola swainsonii, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 171.

Helinaia swainsonii, *Aud,* Syn. 1839, 66 (type of genus. South Carolina to Massachusetts—wrong).—*Aud.* BA. ii. 1841, 83, pl. 104.—*Putn.* Pr. Ess. Inst. i. 1856, 227 (wrong).

Helmitherus swainsonii, *Bd.* BNA. 1858, 252.—*Allen*, Pr. Ess. Inst. iv. 1864, 82 (wrong).—*Allen*, Am. Nat. iii. 1869, 576 (corrects the error).—*Coues*, Key, 1872, 93.

Helminthophaga swainsonii, *Allen*, Am. Nat. iii. 1869, 513.

Vermivora swainsoni, *Bp.* CGL. 1838, 21.

on the forehead, and in the other is provided with slight rictal bristles, and in the relative length of the tarsi and toes. The two species commonly referred to *Helmintherus* are confined to the Eastern United States; they are among the most simply-colored of the Warblers, being plain olivaceous, with more or less characteristic stripes on the head.

The genus *Helminthophaga*, established by Dr. Cabanis in 1850, is peculiarly North American, all the known species being found in this country, and some of them not yet ascertained to occur elsewhere. It is the second largest genus of the subfamily *Sylvicolinæ*. To the six species known to the earlier writers, two more were added a few years ago, and two others have been just now described. It is a notable circumstance that these birds scarcely occur in the West Indies, except in Cuba. The two species last described, *H. leucobronchialis** and *H.*

Mniotilta swainsoni, *Gray*, G. of B. i. 1848, 196.

Helmitheros swainsoni, *Cab.* MH. i. 1850, 20.—*Bp.* CA. i. 1850, 314.

Helmitherus swainsoni, *Bd.* Rev. AB. 1865, 180.—*Coues*, Pr. Ess. Inst. v. 1868, 270 (wrong).—*Coues*, Pr. Bost. Soc. xii. 1868, 109 (South Carolina).—*Gundl.* J. f. O. 1872, 412 (Cuba).—*Mayn.* B. Fla. 1873, 47.—*B. B. & R.* NAB. i. 1874, 190, pl. 10. f. 9; iii. 1874, 504 (Florida).—*Brew.* Pr. Bost. Soc. xvii. 1875, 451 (corrects the long-standing error).

Swainson's Swamp Warbler, Swainson's Warbler, *Authors.*

Hab.—Only known to occur in South Carolina, Georgia, Florida, and Cuba; distribution thus like that of *H. bachmani.* Has been repeatedly but erroneously attributed to New England, on the authority of Dr. Brewer.

*** Helminthophaga leucobronchialis.—White-throated Warbler.**

Helminthophaga leucobronchialis, *Brewster*, Amer. Sportsman, v. Oct. 17, 1874, p. 33 (orig. descr., spec. unique, Newtonville, Mass., May 18, 1870).—*Coues*, BNW. 1874, 760.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439 (note on same specimen).—*Brewster*, Bull. Nutt. Club, i. 1876, 1, pl. 1 (redescr. and fig.).—*Minot*, B. N. Engl. 1877, 92 (copy of the last).—*Trotter*, Bull. Nutt. Club, ii. 1877, 79 (2d spec., from Clifton, Delaware Co., Pa.).

(Note.—Of this supposed good species, no specimen is known to be now in existence. The unique type was accidentally destroyed shortly after publication of the original description, but fortunately not before Mr. Ridgway had made the drawing which illustrates Mr. Brewster's second notice. At the time that the specimen was kindly sent by the owner to the Smithsonian Institution for examination by Mr. Ridgway, there was living at large in the "South Tower" an Owl of the genus *Speotyto*, species doubtful, which had been captured at sea, somewhere near the West Indies, and was destined to make history in an undesirable manner. This reckless bird of prey, in one of his nocturnal explorations, discovered the pretty Warbler, and proceeded to investigate the new species anatomically. He survived the dose of raw cotton and arsenic, but was condemned to death by unanimous verdict of the exasperated ornithologists who haunted the locality. His heart was cut out with mock ceremony, bottled and sealed, and sent to Mr. Brewster as a peace-offering; and a serio-comic narrative of the whole transaction shortly afterward appeared in one of the papers by a "strictly anonymous" author.)

(Note (2).—Since the foregoing was penned, Mr. Spencer Trotter has recorded a second specimen, as above cited.)

lawrencii,* are at present known only from isolated localities, and nothing can be predicated respecting their actual distribution, if, indeed, they be really good species. Another, *H. bachmani*,† is extremely rare, being only known from South Carolina, Georgia, and Cuba. Two, *H. virginiæ* and *H. luciæ*, are characteristic of the Southern Rocky Mountain region and Valley of the Colorado. Two are of rather general distribution in North America, *H. celata* being chiefly Western, but also of irregular occurrence in the East, while *H. ruficapilla* is chiefly Eastern, but is known to reach the Rocky Mountains. *H. peregrina* is much like *ruficapilla*, but more decidedly Eastern, only known to casually reach the Rocky Mountains. The remaining two, *H. pinus*‡ and *H. chrysop-*

***Helminthophaga lawrencii.—Lawrence's Warbler.**

Helminthophaga lawrencii, *Herrick*, Proc. Acad. Nat. Sci. Phila. 1874, 220, pl. 15 (descr. orig. New Jersey).

Helminthophaga lawrencei, *Herrick*, Bull. Nutt. Orn. Club, ii. 1877, 19 (second specimen, from Hoboken, N. J.).

(NOTE.—Closely related to *H. pinus*, from which it differs chiefly in having the chin, throat, and fore breast black. It is curious to observe that the foregoing species differs from its nearest ally, *H. chrysoptera*, in *not* having these parts black. The discovery of the second specimen of *lawrencii* tends, of course, to confirm the validity of the species; but further information respecting both of these novelties is desirable.)

†**Helminthophaga bachmani.—Bachman's Warbler.**

Sylvia bachmani, *Aud.* OB. ii. 1834, 483, pl. 183 (Charleston, S. C.).

Sylvicola bachmani, *Rich.* Sixth Ann. Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.

Vermivora bachmani, *Bp.* C. & G. L. 1838, 21.

Helinaia bachmani, *Aud.* Syn. 1839, 68.—*Aud.* BA. ii. 1841, 93, pl. 108.—*Lemb.* Av. Cuba, 1850, 36, pl. 6, f. 1.—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).

Mniotilta bachmani, *Gray*, G. of B. i. 1848, 196.

Helmitheros bachmani, *Bp.* CA. i. 1850, 315.

Helminthophaga bachmani, *Cab.*—*Gundl.* J. f. O. iii. 1855, 475 (Cuba).—*Gundl.* J. f. O. 1861, 326, 409; 1874, 411 (Cuba).—*Bd.* BNA. 1858, 255.—*Bd.* Rev. AB. 1864, 175.—*Coues*, Pr. Bost. Soc. xii. 1868, 109 (South Carolina).—*Coues*, Key, 1872, 94.—*B. B. & R.* NAB. i. 1874, 194, pl. 11, f. 3.

Mniotilta bachmanni, *Giebel*, Nomencl. Av. ii. 1875, 600.

Bachman's Warbler, Bachman's Swamp-Warbler, *Authors.*

[NOTE.—In the foregoing, "bachmani" and "bachmanii" are not distinguished.]

HAB.—Only known to occur in South Carolina, Georgia, and Cuba—the latter in winter only.

‡**Helminthophaga pinûs.—Blue-winged Yellow Warbler.**

Certhia pinus, *Linn.* SN. i. 1766, 187, n. 16 (diagnosis exclusively pertinent; cites Edwards primarily; wrongly includes Catesby and Brisson in the synonymy).—*Gm.* SN. i. 1788, 470, n. 16 (same as the Linnæan species; Buffon and Latham also cited).

Sylvia pinus, *Lath.* IO. ii. 1790, 537, n. 111.—*Vieill.* OAS. ii. 1807, 44. (Not of *Wilson.*)

Motacilla pinus, *Turt.* SN. i. 1806, 606.

Vermivora pinus, *Sw.* Class. B. ii. 1837, 245, f. 213, *h*, *i*.

Helminthophaga pinus, *Bd.* BNA. 1858, 254.—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*Scl.* Cat. 1861, 28.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 363.—*Barnard*, Smiths. Rep. for 1860, 1861, 435.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 406.—*Bd.* Rev. AB. 1864, 174.—*Allen*, Pr. Ess. Inst. iv. 1864, 82 (Massachusetts).—*Lawr.* Ann. Lyc. N. Y. viii. 1866.

tera, are exclusively Eastern, as far as we now know. The genus, as a whole, is rather southerly, belonging to the United

284.—*Trippe*, Am. Nat. ii. 1868, 174.—*Coues*, Pr. Bost. Soc. xii. 1868, 109.—*Haym.* Geol. Surv. Indiana, 1869, 216.—*Mayn.* Guide, 1870, 100 (Massachusetts).—*Abbott*, Am. Nat. iv. 1870, 543.—*Allen*, Am. Nat. vi. 1872, 265.—*Coues*, Key, 1872, 94.—*Allen*, Bull. MCZ. iii. 1872, 124, 175 (Kansas).—*Snow*, B. Kans. 1873, 4.—*Ridgw.* Am. Nat. vii. 1873, 199.—*Trippe*, Pr. Bost. Soc. xv. 1873, 234 (Iowa).—*Coues*, BNW. 1874, 49.—*Ridgw.* Ann. Lyc. N. Y. x, 1874, 368 (Illinois, breeding).—*Ames*, Bull. Minn. Acad. i. 1874, 56 (Minnesota).—*B. B. & R.* NAB. i. 1874, 195, pl. 11, f. 1.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439 (Conn.).—*Minot*, B. New Engl. 1877, 91.—*Merr.* Trans. Conn. Acad. iv. 1877, 14 (Conn.).

Helminthophaga pinus, *Gregg*, Pr. Elmira Acad. Nat. Sci. 1870, —.

Helminthophaga pina, *Coues*, Pr. Ess. Inst. v. 1868, 271 (S. New England).—*Purdie*, Am. Nat. vii. 1873, 692 (Connecticut, breeding regularly).

Parus aureus alis cæruleis, *Bartr.* Trav. Fla. 1791, 292 (cf. *Coues*, Pr. Phila. Acad. 1875, 352).

Sylvia solitaria, *Wils.* AO. ii. 1810, 109, pl. 15, f. 4.—*V.* Ency. Méth. ii. 1823, 450.—*Bp.* Journ. Phila. Acad. iv. 1824, 189.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 87.—*Nutt.* Man. i. 1832, 410.—*Aud.* OB. i. 1832, 102, pl. 20.—*Haym.* Pr. Phila. Acad. viii. 1856, 290 (Indiana).

Vermivora solitaria, *Jard.* "ed. Wils. 1832".—*Bp.* CGL. 1838, 21.—*Denny*, PZS. 1847, 38.—*Woodh.* Sitgr. Rep. Expl. Col. R. 1853, 72 (Indian Terr., common, breeding).—*Read*, Pr. Phila. Acad. 1853, 399 (Ohio).—*Hoy*, Smiths. Rep. for 1864, 1865, 438 (Missouri).

Sylvicola solitaria, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 171.

Helinaia solitaria, *Aud.* Syn. 1839, 69.—*Aud.* BA. ii. 1841, 98, pl. 111.—*Pratten*, Tr. Illinois Agric. Soc. 1855, 602.—*Putn.* Pr. Ess. Inst. i. 1856, 227 (Massachusetts).

Mniotilta solitaria, *Gray*, G. of B. i. 1848, 196.

Helmitheros solitaria, *Bp.* CA. i. 1850, 315.

Helmitheros solitarius, *Scl.* PZS. 1856, 291 (Cordova).

Helminthophaga solitaria, *Cab.* MH. i. 1850, 20.—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.

Pine Creeper, *Edw.* Glean. pt. ii. 139, pl. 277, f. 2. (Not of *Catesby.*)

Figuier de la Louisiane, *Briss.* Orn. vi. 1760, App. 59 (based on Edwards's Pine Creeper; not the bird described in the body of his work, iii. 576, which is Catesby's Pine Creeper, nor the bird of same name in p. 500, which is *Parula americana*).

Pine Warbler, *Penn.* AZ. ii, 1785, 412, n. 318.—*Lath.* Syn. ii. pt. ii. 1783, 483, n. 107. (Description mostly pertinent, but synonymy confused with that of *Dendrœca pinûs*).

Figuier des Sapins, *Buff.* "v. 276" [?].

Fauvette des Sapins, Sylvia pinus, *V.* N. D. d'H. N. 2d ed. xi. 1817, 218 (description).

Fauvette jaune aux ailes bleues, *V.* Ency. Méth. ii. 1823, 450.

Blue-winged Yellow Warbler (*or* **Swamp-Warbler**), *Authors.*

[NOTE.—The synonymy of the Blue-winged Yellow Warbler, *Helminthophaga pinûs*, is curiously involved with that of the Pine-creeping Warbler, *Dendrœca pinûs*, but may readily be disentangled. Wilson, in fact, understood the case, and showed that the confusion arose from the fact that the "Pine Creeper" of Edwards and the "Pine-Creeper" of Catesby are two different birds, wrongly supposed by Linnæus and Gmelin, as well as by Brisson, Latham, and Pennant, to be the same species. Edwards, it seems, received the *Helminthophaga* from Bartram, and described and figured it (pl. 277) under the style of the "Pine Creeper". Edwards's bird became the *Certhia pinus* of Linnæus, whose diagnosis ("C. flava, supra olivacea, alis cæruleis fasciis duabus albis . . . lora nigra") is exclusively pertinent. Meanwhile, Catesby described and figured the *Dendrœca* under the same style of "Pine-Creeper", *Parus americanus lutescens* (folio and pl. 61); his account is poor and his figure bad, and they were mistaken to indicate the same bird that Edwards treated of. So it fell out that the *Certhia pinus* of Linnæus and Gmelin, the *Sylvia pinus* of Latham, and the Pine Warbler of Latham and Pennant include both birds, as far as synonymy is concerned, though their descriptions all indicate the *Helminthophaga*. Brisson's "Mésange d'Amérique, *Parus americanus*" is based solely on Catesby, and is the *Dendrœca;* but, after thus handling the species in the body of his work (iii. 576), he gives in the appendix (vi. 59) a certain "Figuier de la Louisiane", based solely on Edwards's Pine Creeper (pl. 277), remarking the black loral stripe, as given by Edwards, and thus unmistakably indicating the *Helminthophaga*. But Brisson's "Figuier de la Louisiane", of the body of his work, iii. 500, is *Parula americana*. I have not been able to consult Buffon ("v. 276"), and am consequently unable to say which of the two birds his

States more than to British America, and being well represented in winter in Central America; though at least three of the species, *peregrina*, *celata*, and *ruficapilla*, pass well beyond the United States in the spring, and one of them has even occurred in Greenland. The synonymy of *H. chrysoptera* * is subjoined.

"Figuier des Sapins" may be; the quotation is currently assigned to the *Helminthophaga*. By Linnæus, Gmelin, and others, Catesby is quoted "i. 46"; but on examining the Edwards English-French ed. of 1771, I find that Catesby's 46th folio and plate are devoted to *Ampelis cedrorum*, his 61st folio and plate being the one in question, as correctly cited by Brisson.]

HAB.—Eastern United States. North to Massachusetts (see *Cabot*, Pr. Bost. Soc. vi. 386, and many authors above quoted, but presence in New England denied by Dr. Brewer until 1875) and Minnesota (*Ames*). West to Iowa, Kansas, Indian Territory, and Texas. South through Eastern Mexico to Guatemala (*Salvin*). Not recorded from any of the West Indies.

* **Helminthophaga chrysoptera.—Blue Golden-winged Warbler.**

Motacilla chrysoptera, *Linn.* SN. i. 1766, 333, n. 20 (based on Edw. pl. 299).—*Bodd.* Tabl. PE. 1783, 44 (PE. 709, f. 2).—*Gm.* SN. i. 1788, 971, n. 20.—*Turt.* SN. i. 1806, 597.

Sylvia chrysoptera, *Lath.* IO. ii. 1790, 541, n. 123.—*V.* OAS. ii. 1807, 37, pl. 97.—*Wils.* AO. ii. 1810, 113, pl. 15, f. 5.—*V.* Ency. Méth. ii. 1823, 438, n. 66.—*Bp.* Journ. Phila. Acad. iv. 1824, 190.—*Bp.* AO. i. 1825, 12, pl. 1, f. 3.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 87.—*Nutt.* Man. i. 1832, 411.—*Aud.* OB. v. 1839, 154, pl. 414.—*Peab.* Rep. Orn. Mass. 1839, 312.

Sylvicola chrysoptera, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 171.

Vermivora chrysoptera, "*Sw.*"—*Bp.* CGL. 1838, 21.—*Hoy*, Pr. Phila. Acad. vi. 1853, 312.—*Read*, ibid. 399.—*Kenn.* Tr. Ill. Agric. Soc. i. 1855, 583.

Helinaia chrysoptera, *Aud.* Syn. 1839, 67.—*Aud.* BA. ii. 1841, 91, pl. 107.—*Henry*, Pr. Phila. Acad. vii. 1855, 309.—*Pratten*, Tr. Ill. Agric. Soc. 1855, 602.—*Putn.* Pr. Ess. Inst. i. 1856, 227.—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).

Mniotilta chrysoptera, *Gray*, G. of B. i. 1848, 196.—*Gieb.* Nomenc. Av. ii. 1875, 601.

Helmitheros chrysoptera, *Bp.* CA. i. 1850, 315.

Helmitheros chrysopterus, *Scl.* PZS. 1855, 143 (Bogotá).

Helminthophaga chrysoptera, *Cab.* MH. i. 1850, 20.—*Bd.* BNA. 1858, 255.—*Henry*, Pr. Phila. Acad. xi. 1859, 106.—*S. & S.* Ibis, ii. 1860, 397 (Choctum, Guatemala).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 363.—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 293 (N. Granada).—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Gundl.* J. f. O. 1862, 177 (Cuba).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 406.—*Bd.* Rev. AB. 1864, 175.—*Allen*, Pr. Ess. Inst. iv. 1864, 82.—*S. & S.* PZS. 1864, 347 (Panama).—*Dress.* Ibis, i. 2d ser. 1865, 477 (San Antonio, Tex.).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*McIlwr.* Pr. Ess. Inst. v. 1866, 85 (Canada West).—*Salv.* PZS. 1867, 135 (Veragua).—*Trippe*, Am. Nat. ii. 1868, 181.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Coues*, Pr. Ess. Inst. v. 1868, 271.—*Coues*, Pr. Bost. Soc. xii. 1868, 109.—*Allen*, Am. Nat. iii. 1869, 575.—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.—*v. Frantz.* J. f. O. 1869, 293.—*Mayn.* Guide, 1870, 100.—*Salv.* PZS. 1870, 182 (Veragua).—*Abbott*, Am. Nat. iv. 1870, 543.—*Coues*, Key, 1872, 94, f. 3.—*Gundl.* J. f. O. 1872, 411 (Cuba).—*Scott*, Pr. Bost. Soc. xv. 222.—*Trippe*, Pr. Bost. Soc. xv. 1873, 234.—*Ridgw.* Am. Nat. vii. 1873, 199.—*Coues*, BNW. 1874, 49.—*B. B. & R.* NAB. i. 1874, 192, fig. pl. 11, f. 2.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 368 (Illinois).—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Warren*, Bull. Nutt. Orn. Club, i. 1876, 6 (full account of nest and eggs).—*Gentry*, Life-Hist. 1876, 98.—*Minot*, B. N. Engl. 1877, 91.—*Merr.* Trans. Conn. Acad. iv. 1877, 14 (Connecticut).

Helminthopaga chrysoptera, *Cab.* J. f. O. 1860, 328 (Costa Rica).—*Gregg*, Pr. El. Ac. 1870, —.

Motacilla flavifrons, *Gm.* SN. i. 1788, 976, n. 126 (based on the *Yellow-fronted Warbler* of Penn. and Lath.).—*Turt.* SN. i. 1806, 601.

Sylvia flavifrons, *Lath.* IO. ii. 1790, 527, n. 69.

Parus alis aureis, *Bartr.* Trav. Fla. 1791, 292 (cf. *Coues*, Pr. Phila. Acad. 1875, 352).

Golden-winged Flycatcher, *Edw.* Glean. pt. ii. 189, pl. 299 (basis of *M. chrysoptera* L.).

There is a great similarity in the habits of the *Helminthophagæ*, as might be expected from their close resemblance to each other in structure. They are indefatigable insect-hunters, peering into the crevices of bark and the interstices of leaves and blossoms for the minute bugs upon which they prey, catching them adroitly with their acute and attenuate bill; but they do not appear to pursue flying insects so persistently as many other Sylvicolines are known to do. Their notes are few, odd, and not very musical, pitched in a high key, and delivered in a slender, wiry tone.

They are, without exception, migratory; perhaps they are not more delicate than other Warblers, but the special nature of their food compels them to leave scenes which some other species withstand without inconvenience. Their mode of nesting is nearly uniform; all the species, as far as certainly known, build on the ground or scarcely above it, making rather coarse and bulky nests, for such elegant little owners, out of grasses, weeds, mosses, withered leaves, bark-strips, and the like. The eggs of all are alike white, speckled with various reddish shades.

The ten species may be thrown into two groups, according to color—groups which correspond in a general way with geographical distribution, and exactly divide the genus in halves. In one set of five species, namely, *pinus*, *lawrencii*, *chrysoptera*, *leucobronchialis*, and *bachmani*, the colors are highly variegated, and the tail-feathers are largely blotched with white. These are all exclusively Eastern. In the other five, *ruficapilla*, *virginiæ*, *celata*, *peregrina*, and *luciæ*, the coloration is simpler; the

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Gold-winged Warbler, *Lath.* Syn. ii. pt. ii. 1783, 492, n. 118.
Gold-wing Warbler, *Penn.* A.Z. ii. 1785, 403, n. 295.
Figuier aux ailes dorées, *Buf.* "v. 311".
Figuier cendré à gorge noir de Pensilvanie, Ficedula pensilvanica cinerea gutture nigro, *Briss.* Orn. vi. 1760, 109.
Yellow-fronted Warbler, *Lath.* Syn. ii. pt. ii. 1783, 461, n. 67.—*Penn.* A.Z. ii. 1785, 404, n. 296. (Basis of *Motacilla flavifrons* Gm.)
Fauvette chrysoptère, *V.* Ency. Méth. ii. 1823, 438.
Fauvetee chrysoptère, *Le Moine,* Ois. Canad. 1861, 200.
Golden-winged Warbler, Golden-winged Swamp Warbler, Blue Golden-winged Warbler, *Authors.*

Fig. 31.—Blue Golden-winged Warbler.

Hab.—Eastern United States and Canada (*McIlwraith*). "Nova Scotia" (*Audubon*). Rarer in the Northern States. South (not in Mexico, for all that is known) to New Granada. Many Central American quotations. Cuba only of the West Indies. Breeds at large in the United States; winters beyond our limits.

tail-feathers are not, or not conspicuously, blotched with white; and a mark of all but one of them is a crown-patch of color different from surrounding parts. One of these is Eastern, two are Western, and two are of general dispersion. The males may be recognized, when in perfect plumage, by the following

Analysis of species

I. Tail-feathers conspicuously white-blotched. Wings with white or yellow on coverts. Head or breast with black. (All exclusively Eastern.)

1. Bluish-ash, below white; crown and wing-bars yellow; throat and stripe on side of head black ..... *chrysoptera.*
2. Like the last; "no black on throat" ..... "*leucobronchialis*".
3. Olive-green; wings and tail bluish-ash, former with white or yellow bars; crown and under parts yellow; lores black ..... *pinus.*
4. Like the last; "chin, throat, and breast black" ..... "*lawrencii*".
5. Olive-green, below yellow; throat, breast, and crown-patch black; forehead yellow ..... *bachmani.*

II. Tail-feathers inconspicuously or not blotched with white. No decided wing-markings. No black anywhere.

a. Crown without colored patch. Wings about half as long again as tail.

6. Tail with obscure whitish spot on outer feather; under parts white or whitish; upper parts olive-green, brighter behind, quite ashy in front. Chiefly Eastern ..... *peregrina.*

b. Crown with colored patch. Wings shorter.

7. Crown-patch orange-brown; tail unmarked; upper parts olive-green; under parts greenish-yellow, both nearly uniform. Western and incompletely Eastern ..... *celata.*
8. Crown-patch chestnut; tail unmarked; upper parts olive-green, growing ashy on head; under parts uniformly yellow. Eastern and incompletely Western ..... *ruficapilla.*
9. Crown-patch chestnut; tail unmarked; above olivaceous-ash, below whitish; rump and under tail-coverts bright yellow; breast yellowish. Western ..... *virginiæ.*
10. Crown-patch and upper tail-coverts chestnut; outer tail-feather with dull white patch; above pale cinereous, below white. Western ..... *luciæ.*

The females and young of Sect. II, at least, require more detailed descriptions for their determination in some cases, especially Nos. 7, 8, and 9, which resemble each other quite closely, even when in full plumage. All of them are described in detail in the following pages, with special reference to the characters that distinguish them from each other; and it is believed that there will be no difficulty experienced in discriminating between them, if the diagnostic points which are given are sufficiently considered.

Lucy's Warbler

Helminthophaga luciæ

Helminthophaga luciæ, *Coop.* Pr. Cala. Acad. July, 1862, 120 (Fort Mojave, Ariz.).—*Bd.* Rev. AB. 1865, 178.—*Coues*, Ibis, 2d ser. ii. 1866, 260 (Fort Whipple, Ariz.).—*Coues*, Pr. Phila. Acad. 1866, 70 (Fort Whipple, Ariz.).—*Elliot*, BNA. pl. 5.—*Coop.* Am. Nat. iii. 1869, 476, 479.—*Coop.* B. Cal. i. 1870, 84.—*Coues*, Am. Nat. vi. 1872, 493 (*supposed* nest and eggs).—*Coues*, Key, 1872, 94.—*Brew.* Pr. Bost. Soc. xvii. 1873, 107 (*supposed* nest and eggs).—*B. B. & R.* NAB. i. 1874, 200, pl. 11, f. 9; App. iii. 1875, 504.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 190 (Arizona).

Mniotilta luciæ, *Gieb.* Nomencl. Av. ii. 1875, 603.

Lucy's Warbler, *Authors.*

Hab.—Valley of the Colorado (not yet found outside of Arizona).

Ch. sp.— ♂ ♀ *Cinerea, infrà alba; vertice tectricibusque caudalibus superioribus castaneis.*

♂ ♀: Clear ashy-gray. Beneath white, with a faint tinge of buff on the breast. A rich chestnut patch on the crown, and upper tail-coverts of the same color. A white eye-ring. Quills and tail-feathers edged with the color of the back or whitish. Lateral tail-feather with an obscure whitish patch. Lining of wing white. Feet dull leaden-olive. Iris dark brown or black. Length, 4⅛–4⅜; extent, 7–7½; wing, 2¼–2½; tail, 1¾–2; tarsus, ⅝; bill, ⅛–⅛.

Young: Newly fledged birds lack the chestnut of the crown, though that of the rump is present. The throat and breast are milk-white, without the ochrey tinge of the adults; the wing-coverts are edged with pale rufous.

The chestnut upper tail-coverts, and absence of any trace of olivaceous or yellowish coloration, distinguish this interesting species, the general superficial aspect of which is quite like that of a *Polioptila*.

LUCY'S Warbler is one of the later additions to this genus, the known species of which have still more recently been increased in number by the discovery of *H. virginiæ* in the West, and of *H. leucobronchialis* and *H. lawrencii* in the Eastern States. It illustrates the extreme of the gradation in color which the olivaceous *Helminthophagæ* present, from such greenish species as the Nashville and the Orange-crowned, through the partly cinereous Virginia's and Tennessee Warblers, to the entirely ashy and white *H. luciæ*, in which the upper tail-coverts as well as the crown are, moreover, differently colored from the rest of the body.

The interesting bird is one of Dr. Cooper's discoveries, having been first observed by this gentleman at Fort Mojave, Arizona, where it arrived one year during the latter part of March, the first specimen having been secured on the 25th of that month. The males appeared to have preceded the females, as no individuals of the latter sex were noted until about ten days afterward. The birds soon became quite numerous in the mezquite

thickets, where they were observed to frequent the tops of the trees, uttering their curious notes during their incessant pursuit of insects. In the course of the two months during which they continued under Dr. Cooper's observations, six specimens were secured, but their mode of nest-building was not ascertained.

Two years subsequently, in March, 1863, Mr. Holden secured additional specimens near the 34th parallel; and, in the spring of 1865, Lucy's Warbler fell to my own lot. Whilst rambling one pleasant April morning along the little stream that flows past Fort Whipple, I heard a curious note, which reminded me of that of a Gnatcatcher (*Polioptila*), and was not long on the alert before I saw one of the modest vocalists, betrayed no less by the restlessness with which the bird skipped about in the budding foliage than by the singularity of its voice. Not recognizing the species, I made the usual sacrifice without delay, and was overjoyed to find, as I turned the dainty bird over and over in my hand, removing every trace of blood and smoothing every ruffled feather, that I had taken a species new to me; for I had not then learned of Dr. Cooper's prize, and moments of discovery are always moments of pardonable enthusiasm. In the course of the spring, I took a few more specimens, among them the first ones, I think, of the young, which differ in some particulars from the adults. These Warblers, however, did not appear to be very common in the field of my observations; they are rather timid and retiring birds, likely to be long overlooked in the thickets and copses to which they seem so much attached. They reach the vicinity of Fort Whipple, which is pretty high among the mountains, about the middle of April, thus much later than the time of their appearance in lower portions of the Territory, and remain until the latter part of September, if not longer. They certainly breed there; for I found a newly fledged brood of young, just about to disperse, early in May. This family was reared in a little clump of willow bushes along the stream, and seemed so feeble on wing that I attempted to catch one of them alive; but the little thing was too quick for me, and I shot it after giving up the chase. The nest was, of course, somewhere near at hand, but I failed to find it.

When penning some notes on this species, which were published in 1866, I ventured to surmise that the nest would be found not on the ground, but in the crotch of a bush. "Should

it prove so," Dr. Brewer recently replied, "it would in this respect differ from all the other members of this well-marked group"; nevertheless, on the fifth page following, in the same work, Dr. Brewer describes a nest of *Helminthophaga peregrina*, which, he says, "was built in a low clump of bushes". Some uncertainty in the case continues, I regret to say, though accounts of a nest and eggs, fully believed to be those of Lucy's Warbler, and confirming my surmise of its non-terrestrial nidification, have been published both by Dr. Brewer and myself. Writing from Tucson, Arizona, under date of May 19, 1872, Lieut. (now Captain) Charles Bendire informed me by letter that he had that day found a nest "of a very small warbler, four inches long, which has a bright chestnut spot on the crown, and the tail coverts of the same color, the other upper parts cinereous, the lower parts dull white". I shortly afterward published the account in the American Naturalist, and another notice, based on the same data, was next year put on record by Dr. Brewer, as above cited. The eggs were described as four in number, nearly globular in shape, scarcely larger than a Hummingbird's, white, with fine red spots at the larger end: they contained large embryos. They were placed between the bark and main wood of a dead mezquite tree, about four feet from the ground. The bird described was surely no other than Lucy's Warbler: the only question is, whether the nest and eggs belonged to it. The ostensible evidence, however, is without flaw, and may be accepted until rebutted, though it is against the analogy of nidification in this genus upon which Dr. Brewer has properly dwelt.

Lucy's Warbler is thus far only known from the Territory of Arizona, and its abode in winter, which we may presume to be in Mexico, remains to be ascertained, as does also probably its limit of distribution in other directions. It was first figured by Mr. D. G. Elliot on plate V of his splendid work, and subsequently by the authors of the "History of North American Birds", from a drawing of the head made by Mr. Ridgway. The citations at the head of this article indicate nearly the whole of the literature the little bird has occasioned up to the date of present writing, and include only one synonym, namely, that resulting from the reference of the species to the genus *Mniotilta* by Professor Giebel, who, in 1875, threw nearly all the *Sylvicolinæ* together under this head, as Mr. George Robert Gray had likewise done before him.

Virginia's Warbler

Helminthophaga virginiæ

Helminthophaga virginiæ, *Bd.* BNA. ed. of 1860 (not of 1858), Atlas, p. xi, footnote, pl. 79, f. 1 (Cantonment Burgwyn, N. Mex.).—*Bd.* Rev. AB. 1865, 177.—*Coues*, Pr. Phila. Acad. xviii. 1866, 70 (Fort Whipple, Ariz.).—*Coop.* B. Cal. i. 1870, 85.—*Coues*, Key, 1872, 94.—*Aiken*, Pr. Bost. Soc. xv. 1872, 196 (Colorado; nest and eggs).—*Ridgw.* Bull. Ess. Inst. v. 1873, 180.—*Coues*, BNW. 1874, 51.—*B. B. & R.* NAB. i. 1874, 199, pl. 11, f. 12; App. iii. 504.—*Hensh.* Rep. Orn. Specs. 1874, 41.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 189.

Mniotilta virginiæ, *Gieb.* Nomencl. Av. ii. 1875, 608.

Virginia's Warbler, Rocky Mountain Warbler, *Authors.*

Hab.—Southern portion of the Middle Province of the United States, or Southern Rocky Mountain region at large. North to Nevada, Utah, and Colorado at least, where it breeds. Found (migratory?) in New Mexico and Arizona. Winter resorts unknown (probably in Mexico).

Ch. sp.— ♂ *plumbea, infrà sordidè alba; tectricibus caudæ superioribus et inferioribus, necnon maculâ pectorali, flavis; vertice castaneo.* ♀ *sat similis, partibus flavis obscurioribus, pileo castaneo restricto.*

♂, in summer: Ashy-plumbeous, alike on the back, and top and sides of head. Below dull whitish, the sides shaded with ashy. Lining and edge of wings white. Upper and under tail-coverts, and isolated spot on the breast, yellow, in strong contrast with all surroundings. A white ring round eye. Wings and tail without yellowish edgings. Crown with a chestnut patch, as in *H. ruficapilla*. Length, 4¾; extent, 7½; wing, 2¼-2½; tail, 2¼.

♀, in summer: Quite like the male, the yellow duller and slightly tinged with greenish; that of the breast, and the chestnut of the crown, more restricted than in the ♂.

Autumnal specimens resemble the ♀ most nearly; but in both sexes the plumbeous of the upper parts has a slight olive shade, and in birds of the year the crown-patch may be wanting.

When this species was first described, from defective material, the isolated yellow spot on the breast, so different from anything observed elsewhere in the genus, suggested the possibility that better plumaged specimens might be extensively yellow underneath, and thus like *H. ruficapilla*. But many specimens since taken, in high spring plumage, intensify the original characters given of the species, and separate it still more widely from *H. ruficapilla*. The whole upper parts are about of the shade of the head of *ruficapilla*, and, even when most glossed with olive, are still strongly contrasted with the yellow upper tail-coverts. The under parts are as white as in adult *peregrina*, with the yellow spot on the breast, and yellow under tail-coverts, both in strong contrast. The chestnut crown and white eye-ring are much as in *ruficapilla*.

VIRGINIA'S Warbler was discovered at Cantonment Burgwyn, in New Mexico, by Dr. W. W. Anderson, and first described, in 1860, by Professor Baird, who dedicated it to the wife of the discoverer. The type-specimen remained unique

until 1864, when the present writer took a second example at Fort Whipple, on the 15th of August; this was a young bird, very likely bred in the vicinity. Shortly afterward, in 1869, Mr. Ridgway ascertained that the bird was abundant in the East Humboldt and Wahsatch Mountains, where it was breeding in thickets of scrub-oak. He found a nest containing four eggs, on the 9th of August, on the side of a ravine; it was sunken in the ground among the withered leaves, so that its brim was flush with the surface, and measured 3½ inches in diameter by 2 inches in depth. The material consisted of loosely interwoven strips of the inner bark of the "mountain mahogany", mixed with grasses, mosses and slender rootlets, and lined with the fur of some small quadruped. According to Dr. Brewer's measurements, the eggs were 0.64 long by 0.47 broad; the ground-color, when fresh, was rosy white, and this was "profusely spotted with numerous small blotches and dots of purplish-brown and lilac, forming a crown around the larger end".

Mr. C. E. Aiken shortly afterward extended the known range of the species to include the eastern foot-hills of the Rocky Mountains in Colorado, where it breeds. This excellent observer found it in various parts of the State, but especially along the eastern base of the mountains, where, in its favorite haunts, it sometimes outnumbers all the other Warblers put together. It is a shy and timid species, generally darting, with its sharp note of alarm, into its place of concealment when approached. In summer, it frequents the scrub of the hillsides, at any elevation up to about 7,500 feet, but during the migrations it is found indifferently in the pine forests and among the cottonwoods and willows along the streams. "The male is very musical during the nesting season", says Mr. Aiken, "uttering his sweet ditty continually as he skips through the bushes in search of his morning repast; or having satisfied his appetite, he mounts to the top of some tree in the neighborhood of his nest, and repeats at regular intervals a song of remarkable fullness for a bird of such minute proportions. . . . No bird with which I am acquainted conceals its nest more effectually than this warbler. This is placed at the base of a tussock of grass among the oak bushes, being sunk in a hollow scratched in the earth, so that the rim of the nest is on a level with the surface. The overhanging grass of the tussock hides all so completely that the nest is only to be discovered by the most careful and persistent search. About the first of June, five white eggs, delicately speckled with reddish brown, are laid."

Nashville Warbler

Helminthophaga ruficapilla

Sylvia ruficapilla, *Wils.* AO. iii. 1811, 120, pl. 27, f. 3.—*Bp.* Journ. Phila. Acad. iv. 1824, 197.—*Aud.* OB. i. 1832, 450, pl. 89.

Mniotilta ruficapilla, *Gray,* G. of B. i. 1848, 196.

Helminthophaga ruficapilla, *Bd.* BNA. 1858, 256.—*Scl.* PZS. 1858, 298 (Parada).—*Scl.* PZS. 1859, 373 (Oaxaca).—*Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 363.—*Scl.* Cat. AB. 1861, 29.—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 406.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125 (Maine, rare).—*Verr.* Pr. Ess. Inst. iii. 1862, 146 (Maine, rare).—*Blak.* Ibis, v. 1863, 62 (Great Slave Lake) —*Bd.* Rev. AB. 1864, 175.—*Allen,* Pr. Ess. Inst. iv. 1864, 59 (Massachusetts, breeding).—*Dress.* Ibis, 1865, 477 (San Antonio, Tex.).—*McIlwr.* Pr. Ess. Inst. v. 1866, 85 (Canada West).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe,* Am. Nat. ii. 1868, 177.—*Coues,* Pr. Ess. Inst. v. 1868, 270.—*Coues,* Pr. Bost. Soc. xii. 1868, 109 (South Carolina).—*Turnb.* B. E. Pa. 1869, 24; Phila. ed. 17.—*Sumich.* Mem. Bost. Soc. i. 1869, 546 (Orizaba).—*Coop.* B. Cal. i. 1870, 82.—*Mayn.* Guide, 1870, 99.—*Gregg,* Pr. Elmira Acad. 1870, p. —.—*Parker,* Am. Nat. v. 1871, 168.—*Allen,* Bull. MCZ. iii. 1872, 175 (Kansas; Utah).—*Coues,* Key, 1872, 94.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 362.—*Mayn.* B. Fla. 1873, 63.—*Trippe,* Pr. Bost. Soc. xv. 1873, 234.—*Ridgw.* Bull. Ess. Inst. v. 1873 (Colorado; Utah; Nevada) —*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713.—*Packard,* Am. Nat. viii. 1874, 271.—*Ames,* Bull. Minn. Acad. 1874, 56 (Minnesota).—*Coues,* BNW. 1874, 50.—*B. B. & R.* NAB. i. 1874, 196, fig. p. 191, pl. 11, f. 7, 8.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 368.—*Hensh.* Rep. Orn. Specs. 1874, 41.—*Hensh.* List B. Ariz. 1875, 156.—*Brewst.* Ann. Lyc. N. Y. xi. 1875, 135 (Virginia).—*Newton,* Birds Greenland, p. 99 (Godthaab, 1835, Fiskenæs, Aug. 31, 1840).—*Nels.* Pr. Bost. Soc. xvii. 1875, 357 (California).—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 188.—*Lawr.* Bull. U. S. Nat. Mus. n. 4, 1876, 15 (Tehuantepec).—*Minot,* B. N. Engl. 1877, 94.—*Merr.* Trans. Conn. Acad. iv. 1877, 14.

Helminthophaga ruficapilla, *vars.* ruficapilla, ocularis, gutturalis, *Ridgw. apud B. B. & R.* NAB. i. 1874, 191.

Sylvia rubricapilla, *Wils.* AO. vi. 1812, 15 (Index).—*Bp.* Journ. Phila. Acad. iv. 1824, 197.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 87.—*Nutt.* Man. i. 1832, 412.—*Peab.* Rep. Orn. Mass. 1839, 313.—*Thomps.* Vermont, 1853, 81.

Sylvicola (Vermivora) rubricapilla, *S. & R.* FBA. ii. 1831, 220, pl. 42, up. fig.

Sylvicola rubricapilla, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 171.—*Willis,* Smiths. Rep. for 1858, 1859, 282.

Vermivora rubricapilla, *Bp.* CGL. 1838, 21.—*Nutt.* Man. i. 2d ed. 1840, 472.—*Hoy,* Pr. Phila. Acad. vi. 1853, 312.—*Read,* Pr. Phila. Acad. vi. 1853, 399.—*Reinh.* "Vid. Meddel. for 1853, 1854, 82" (Greenland).—*Reinh.* J. f. O. 1854, 439 (same).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 583.—*Brew.* Pr. Bost. Soc. 1856, 4 (nest and eggs).

Helinaia rubricapilla, *Aud.* Syn. 1839, 70.—*Aud.* BA. ii. 1841, 103, pl. 113.—*Giraud,* BLI. 1844, 69.—*Pratten,* Tr. Illinois Agric. Soc. i. 1855, 602.—*Putn.* Pr. Ess. Inst. i. 1856, 208.

Helmitheros rubricapilla, *Bp.* CA. i. 1850, 315.

Helmitheros rubricapillus, *Scl.* PZS. 1856, 291 (Cordova).

Helminthophaga rubricapilla, *Cab.* MH. i. 1850, 20 —*Scl.* PZS. 1859, 363 (Xalapa).—*Allen,* Am. Nat. vi. 1872, 265.

Mniotilta rubricapilla, *Reinh.* Ibis, iii. 1861, 6 (Greenland).

Sylvia leucogastra, *Steph.* "Shaw's Gen. Zool. x. 1817, 622".

Sylvia nashvillei, *Vieill.* Ency. Méth. ii. 1823, 451, n. 111 (based on Wilson).

Sylvia mexicana, "*Holböll.*" [Where?]

Fauvette nashville, *V.* l. c.

Nashville Warbler, Nashville Swamp Warbler, Nashville Vermivora, Nashville Wormeater, *Authors.*

HAB.—Temperate North America, but especially the Eastern Province. North casually to Greenland (two instances, *J. Reinhardt, A. Newton*). West occasionally to Utah (Ogden, *J. A. Allen*), Nevada (Humboldt Mountains,

R. Ridgway), and California (Lake Tahoe, *F. Gruber;* Fort Tejon, *J. Xantus*); "Columbia River" (*auct. Audubon*); not yet detected in intervening ground. Mexico (numerous quotations). Not in West Indies or Central America? Breeds from Massachusetts (and probably much farther south in the Alleghany Mountains) northward.

CH. SP.— ♂ *flavido-olivacea, uropygio magis flavicante, capite cinereo, pileo castaneo plus minusve celato; infrà ex toto flava.* ♀ *sat similis, obscurior, capite aliquantulum olivascente.*

♂, in summer: Upper parts olive-green or yellowish-olive, clearer and brighter on the rump and upper tail-coverts. Top and sides of the head and neck ashy, with a more or less veiled chestnut patch on the crown, and a white ring round the eye. No superciliary stripe. Lores pale. Wings and tail fuscous, edged with the color of the back. Entire under parts yellow, including under wing-coverts and edge of the wing, the sides somewhat shaded with olive. Length, 4½–4¾; extent, 7½; wing, 2⅛–2½; tail, 1⅞–2.

♀, in summer: Similar to the male. Head less purely ashy. Crown-patch smaller and more hidden, if not wanting. Yellow of under parts paler, whitening on the belly.

Autumnal specimens, of both sexes, though quite as yellow below as in summer, have the ash of the head glossed over with olivaceous, and in birds of the year the crown-patch may be entirely wanting.

This species is distinguished from any other by the rich clear yellow of the under parts at all seasons. In *H. celata*, which is next most yellow below, the color has a greenish cast; the head is little, if any, different from the rest of the upper parts, and the crown-patch is orange-brown.

LONG supposed to be a bird of the Eastern Province, the Nashville Warbler has gradually come to be known from nearly all portions of North America, and the extensive distribution I here attribute to the species is fully attested. Wilson described it, probably for the first time, from the vicinity of the city whose name it has since borne, and it was a rarity to the early school; Audubon speaks of a few specimens of his from Kentucky and Louisiana; Richardson records it from the Fur Countries; and Swainson figures a specimen from Cumberland House. Nuttall speaks of it as a Southern bird, and subsequently as occurring in Labrador. Its occurrence in Greenland in two instances, in 1835 and 1840, is attested by Reinhardt and A. Newton. In 1858, Baird gave its general distribution as "Eastern North America to the Missouri". Audubon had long before ascribed it to the Columbia River; and though such ascription may not have been confirmed by later observation, it is probably correct. At any rate, we have now many Western records. Xantus got the bird at Fort Tejon in California, and Gruber soon found it at Lake Tahoe; Allen

observed it in Utah, considering it quite common about Ogden; Ridgway noticed it in Nevada; and Henshaw has latterly recorded a number of specimens from Arizona, in which Territory he states that it probably occurs only as a migrant, and that he found it common in August and September in the vicinity of Camp Crittenden. I have collated numerous Mexican records, presented in the foregoing synonymy, but have found no evidence that the bird is known at all either from Central America or the West Indies.

In the greater part of the United States, it has the reputation of a migratory bird; but I suspect that it will finally be ascertained to breed much farther south than it is now known to do, particularly in the higher mountains of the West, both along the Rocky Chain and in the Sierras of California; for various birds, like the Kinglets and Titlarks, nestle there in latitudes to which they are strangers during the breeding season in the East. Most of our accounts of its nidification come from the ornithologists of New England, and especially of Massachusetts, where the study of our birds has long been pursued with unusual ardor and commensurate success. North of this latitude, the Nashville Warbler will probably be found as a summer resident wherever found at all. Several excellent accounts of its habits and satisfactory descriptions of its nest and eggs having already appeared, I shall not pursue the subject, the purpose of this article being rather to signalize the occurrence of the bird in the region now under consideration, and indicate its wide dispersion in North America and Mexico, than to present its history in full.

Orange-crowned Warbler

Helminthophaga celata

a. celata

Sylvia celata, *Say*, Long's Exped. R. Mts. i. 1823, 169.—*Bp.* AO. i. 1825, 45, pl. 5, f. 2.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 88.—*Nutt.* Man. i. 1832, 413.—*Aud.* OB. ii. 1834, 449, pl. 178.—*Towns.* Journ. Phila. Acad. viii. 1839, 153.—*Peab.* Rep. Orn. Mass. 1839, 313.

Sylvicola celata, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 171.—*Finsch*, Abh. Nat. iii. 1872, 36 (Alaska).

Vermivora celata, *Bp.* CGL. 1838, 21.—*Nutt.* Man. i. 2d ed. 1840, 473.—*Gamb.* Pr. Phila. Acad. iii. 1846, 155.—*Gamb.* Journ. Phila. Acad. i. 1847, 37.—*Hoy*, Pr. Phila. Acad. vi. 1853, 312.

Helinaia celata, *Aud.* Syn. 1839, 69.—*Aud.* BA. ii. 1841, 100, pl. 112.—*Heerm.* Journ. Phila. Acad. ii. 1853, 263.—*Pratten*, Tr Ill. Agric. Soc. i. 1855, 602.

Mniotilta celata, *Gray*, G. of B. i. 1848, 196.—*Gieb.* Nomenc. Av. ii. 1875, 601.

Helmitheros celata, *Bp.* Syn. CA. i. 1850, 315.

Helmitheros celatus, *Scl.* PZS. 1857, 212 (Orizaba).

Helminthophaga celata, *Bd.* BNA. 1858, 257.—*Scl.* PZS. 1858, 298 (Parada).—*Scl.* PZS. 1859, 235 (Vancouver); 373 (Oaxaca).—*Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*Bd.* U. S. Mex. B. Surv. pt. ii. 1859, Birds, 10.—*Heerm.* PRRR. x. 1859, 40.—*Coop. & Suckl.* NHWT. 1860, 178.—*Bd.* Ives's Colo. Rep. pt. v. 1861, 5.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 160.—*Scl.* PZS. 1862, 19 (Parada).—*Blak.* Ibis, iv. 1862, 4 (Saskatchewan).—*Blak.* Ibis, v. 1863, 62.—*Bd.* Rev. AB. 1864, 176.—*Lord,* Pr. Roy. Arty. Inst. iv. 1864, 115.—*Allen,* Pr. Ess. Inst. iv. 1864, 60 (Massachusetts).—*Dress.* Ibis, 2d ser. i. 1865, 477 (Texas).—*Coues,* Ibis, 2d ser. ii. 1866, 262 (Fort Yuma).—*Coues,* Pr. Phila. Acad. xviii. 1866, 70 (Fort Whipple).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Coues,* Pr. Bost. Soc. xii. 1868, 108 (South Carolina).—*Coues,* Pr. Ess. Inst. v. 1868, 271.—*Trippe,* Am. Nat. ii. 1868, 181.—*Brown,* Ibis, 2d ser. iv. 1868, 420 (Vancouver).—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Texas).—*Coop.* Am. Nat. iii. 1869, 476.—*Turnb.* B. E. Pa. 1869, 53; Phila. ed. 42.—*Dall & Bann.* Tr. Chic. Acad. i. 1869, 278.—*Coop.* Pr. Cal. Acad. 1870, 75.—*Coop.* B. Cal. i. 1870, 83, fig.—*Allen,* Bull. MCZ. ii. 1871, 268 (Florida) —*All.* Bull. MCZ. iii. 1872, 175 (Utah and Kansas).—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 463.—*Coues,* Key, 1872, 95.—*Aiken,* Pr. Bost. Soc. xv. 1872, 96.—*Allen,* Am. Nat. vi. 1872, 265, 396.—*Ridgw.* Am. Nat. vii. 1873, 606.—*Ridgw.* Bull. Ess. Inst. v. 1873, 180 (Colorado).—*Mayn.* B. Fla. 1873, 61.—*Trippe,* Pr. Bost. Soc. xv. 1873, 234.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713.—*Herrick,* Bull. Ess. Inst. v. 1873, p. — (Grand Menan).—*Snow,* B. Kans. 1873, 4.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 368.—*Coop.* Am. Nat. viii. 1874, 16.—*Coues,* BNW. 1874, 52.—*Hensh.* Rep. Orn. Specs. 1874, 41, 57, 74, 102.—*Ames,* Bull. Minn. Acad. 1874, 56.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439 (Massachusetts).—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 191.—*Fox,* "Forest and Stream, vi. 354" (New Hampshire).—*Brewster,* Bull. Nutt. Club, i. 1876, 94 (Mssachusetts, for the third time).—*Minot,* B. N. Engl. 1877, 95.—*Purdie,* Bull. Nutt. Club, ii. 1877, 21 (Rhode Island, in December).—*Merr.* Trans. Conn. Acad. iv. 1877, 15 (Massachusetts and Rhode Island).

Helminthophaga celata *var.* **celata,** *B. B. & R.* NAB. i. 1874, 202, pl. 11, f. 5, 6.

Helminthophaga celata *var.* **obscura,** *Ridgw. apud B. B. & R.* NAB. i. 1874, 192.

Orange-colored Warbler, *Peabody,* l. c.

Orange-crowned Warbler, Orange-crowned Swamp Warbler, Orange-crowned Vermivora, *Authors.*

b. lutescens

Helminthophaga celata *var.* **lutescens,** *Ridgw.* Am. Journ. Sci. 1872, 457.—*Ridgw.* Am. Nat. vii. 1873, 606.—*B. B. & R.* NAB. i. 1874, 204, pl. 11, f. 4.

Helminthophaga celata b. lutescens, *Coues,* BNW. 1874, 52.

Pacific Orange-crowned Warbler, *B. B. & R.* l. c.

HAB.—North America at large, but especially the Western and Middle Provinces; rare or occasional in the Eastern Province. North regularly to high latitudes in British America and Alaska. South into Mexico, but not recognized as West Indian or Central American. Winters from the southern borders of the United States southward. Var. *lutescens* along the Pacific coast, from the Yukon River to Cape Saint Lucas.

CH. SP.— ♂ ♀ *Olivacea, uropygio magis flavicante; infrà sordidè flavo-albida; vertice aurantiaco.*

♂ ♀, in summer: Upper parts olive, duller and washed with grayish toward and on the head, brighter and more yellowish on the rump and upper tail-coverts. Beneath greenish-white, palest on the belly and throat, more olive-shaded on the sides; the color not pure, but rather streaky, and having in places a grayish cast. Wings and tail edged with the color of the back; lining of the wings like the belly, and inner edges of tail-feathers whitish. Orbital ring and lores yellowish. An orange-brown patch on the crown, partially concealed, smaller and more hidden in the ♀ than in the ♂. Size of *ruficapilla*

The sexes of this species scarcely differ, and young or autumnal birds are very similar to the adults, except the frequent or usual absence of the orange-brown crown-spot in birds of the year. The species is well distinguished from all its allies by the color of the crown-patch, as well as by the general oliveness and yellowness of coloration, no part of the bird being pure ashy or white.

The foregoing description is applicable more particularly to typical *celata*, from which the Pacific-coast form differs decidedly, as pointed out by Mr. Ridgway, being much more richly colored. It may be described simply as olive-green above, and greenish-yellow, shaded with olive, on the sides below, without any of the qualifying terms required for precision in the case of typical *celata*. This form, *lutescens*, occurs in parts of the Colorado region during the migrations, when it is associated with true *celata*, but is stated to breed only farther north and more coastwise.

AS remarked by Dr. Brewer, the geographical distribution of *H. celata* is involved in some obscurity, probably owing to its irregularity of migration. The bird was unknown to Wilson, but described soon after his time by Mr. Say, whose zoölogical commentary has rendered "Long's Expedition" memorable to ornithologists. After a few years, Nuttall spoke of it as not uncommon in the orange-groves of West Florida; he may or may not have had some other species in view, but we find Allen recording *celata* among the winter birds of Florida, as well as attesting its occurrence in Massachusetts. Thus it appears that Audubon's notice of its movements is probably well founded, and that it was not sufficiently considered, when, in 1858, Baird assigned a range only from the Mississippi River to the Pacific. The gist of the matter would appear to be that we have here a bird of very general dispersion in North America, evenly and regularly distributed in large numbers over more than the western half of the continent, but of rare and perhaps fitful occurrence in the Atlantic States. The extra-limital records, without exception so far as I know, are Mexican. The habitat of the species is thus brought into close correspondence with that of *H. ruficapilla*, though the areas of greatest abundance of the two species are upon opposite sides of the continent.

I have myself only observed the Orange-crowned Warbler in the West, where it is a common bird, at least during the migrations. It is known to winter along our southwestern border, as it also does in Florida. Its breeding-range appears to be nearly coextensive with the whole area of its distribution in the West, where the mountain chains afford the elevation that answers to increase of latitude as far as the nidification

of birds is concerned. We may consider, therefore, that this pretty bird, whose very name is suggestive of the topic now under discussion, is virtually a summer resident as well as a migrant in all the mountainous Territories of the West, nesting at certain elevations that afford conditions corresponding to those that it finds down to sea-level in the boreal regions to which some individuals press on in the alluring spring-time. It has been traced to the Yukon River, along which mighty water-course the lamented Kennicott found its nests, which were placed on the ground, generally in clumps of low bushes. The same naturalist observed its nesting about Great Slave Lake in June, and both Dr. Brewer and myself have drawn up our descriptions of the structure and its contained eggs from the material thus furnished. The former notes certain variations in architecture according to locality, nests which he examined from more arctic regions being smaller and more compact, as well as more homogeneous in the materials used, which were chiefly stems of small plants and the finer grasses. As usual in the case of ground-building birds, the nests of the Orange-crown seem large for the size of the bird; they may be built of fibrous bark strips outside, and fine grasses or mosses within, with or without other lining, such as the fur of animals. The eggs, which have been found to be four, five, or six in number, measure about 0.67 in length by 0.50 in greatest diameter; the color of the shell is white, dotted all over—sometimes profusely, sometimes sparsely—with light reddish-brown, the marking being either evenly distributed over the surface, or, as is oftener the case, more numerous about the larger than toward the other end.

Within the limits of the Colorado Basin, which is so highly diversified in its surface features and climatic conditions, the Orange-crowned Warbler has the mixed character of both a resident and a migratory species. In the spring, it ascends the mountains to seek a congenial nesting place, even at a height of 11,000 feet; it retreats in the fall from these elevated regions, and becomes more generally dispersed. You will find it during the migrations especially in the shrubbery along water-courses, where you may recognize it by its apparently uniform yellowishness, its sprightly, restless movements, its frequent aërial forays after passing insects, and the sharp, wiry "tsip", the incessant repetition of which expresses the vivacity of its

nature. Its nuptial song I have never heard, for I have never found the bird wearing the orange-blossoms; those who have been more fortunate say that the stave consists of a few sweet trills, varied according to the spirit of the songster, but always ending abruptly with a rising inflection.

Tennessee Warbler

Helminthophaga peregrina

Sylvia peregrina, *Wils.* AO. iii. 1811, 83, pl. 25, f. 2.—*Bp.* Journ. Phila. Acad. iv. 1824, 196.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 87, 439.—*Nutt.* Man. i. 1832, 412.—*Aud.* OB. ii. 1834, 307, pl. 154.

Sylvicola (Vermivora) peregrina, *S. & R.* FBA. ii. 1831, 221, pl. 42.

Sylvicola peregrina, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 171.

Vermivora peregrina, *Bp.* CGL. 1838, 21.—*Nutt.* Man. i. 2d ed. 1840, 469.—*Hoy,* Pr. Phila. Acad. vi. 1853, 312 (Wisconsin).—*Read,* ibid. 399 (Ohio).—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Hoy,* Smiths. Rep. for 1864, 1865, 438 (Missouri).

Helinaia peregrina, *Aud.* Syn. 1839, 68.—*Aud.* BA. ii. 1841, 96, pl. 110.—*Pratten,* Tr. Ill. Agric. Soc. 1855, 602.—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).

Mniotilta peregrina, *Gray,* G. of B. i. 1848, 196.—*Cabot,* Naum. Jahrg. ii. Heft iii. 1852, 66.

Helmitheros peregrina, *Bp.* CA. i. 1-50, 315.

Helminthophaga peregrina, *Cab.* MH. i. 1850, 20.—*Bd.* BNA. 1858, 258.—*Scl.* PZS. 1859, 373 (Oaxaca).—*S. & S.* Ibis, ii. 1860, 31 (Coban, V. P.).—*Cab.* J. f. O. 1861, 85 (Costa Rica).—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 322 (Panama).—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Gundl.* J. f. O. 1862, 177 (Cuba).—*Blak.* Ibis, iv. 1862, 4 (Saskatchewan).—*Verr.* Pr. Ess. Inst. iii. 1862, 156.—*Blak.* Ibis, v. 1863, 62.—*Allen,* Pr. Ess. Inst. iv. 1864, 61.—*S. & S.* PZS. 1864, 347 (Panama) —*Lawr.* Ann. Lyc. N. Y. viii. 1865, 174 (Chiriqui) —*Bd.* Rev. AB. 1865, 178.—*Salv.* PZS. 1867, 135 (Veragua).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284 (New York); ix. 1868, 94 (Costa Rica).—*Coues,* Pr. Ess. Inst. v. 1868, 270.—*Coues,* Pr. Bost. Soc. xii. 1868, 109.—*Trippe,* Am. Nat ii. 1868, 181.—*Allen,* Am. Nat. iii. 1869, 575.—*Turnb.* B. E. Pa. 1869, 24; Phila. ed. 17—*v. Frantz.* J. f. O. 1869, 293 (Costa Rica).—*Salv.* PZS. 1870, 182 (Veragua).—*S. & S.* PZS. 1870, 836 (Honduras).—*Mayn.* Guide, 1870, 100.—*Wyatt,* Ibis, 3d ser. i. 1871, 322 (Herradura).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 362.—*Coues,* Key, 1872, 95.—*Gundl.* J. f. O. 1872, 412 (Cuba).—*Herrick,* Bull. Ess. Inst. v. 1873 (Grand Menan).—*Ridgw.* Bull. Ess. Inst. v. 1873, 180 (Colorado).—*Snow,* B. Kans. 1873, 5.—*Coues,* BNW. 1874, 53.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 368 (Illinois).—*B. B. & R.* NAB. i. 1874, 205, pl. 11, f. 10, 11.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 15 (Tehuantepec).—*Minot,* B. N. Engl. 1877, 96.

Helminthopaga peregrina, *Gregg,* Pr. Elmira Acad. 1870, —.

Sylvia tenenssæi, *V.* EM. ii. 1823, 452, n. 114.

Sylvicola missuriensis, *Maxim.* J. f. O. vi. 1858, 117.

Fauvette du tenenssée, *V.* l. c.

Tennessee Swamp Warbler, Tennessee Warbler, Tennessee Vermivora, *Authors.*

Hab.—Chiefly Eastern North America. West to the Upper Missouri (*J. G. Bell, auct. Audubon*) and Colorado (El Paso County, *C. E. Aiken, auct. Ridgway*). Cuba. Mexico. South to Colombia. Breeds in the northern tier of States, and northward to high latitudes.

Ch. sp.— ♂, *adultus, nupt. temp., suprà flavo-olivacea posticè vegetior, anticè cinerea; subtus ex toto albida; vertice immotata; caudâ brevissimâ, vix bipollicari; alis longissimis.* ♀ *et juv.*

vegetiores, suprà flavo-olivascentes, subtus virenti-albidæ. Long. tot. 4½–4¾, *alæ* 2¾, *caudæ* 1⅞–2.

♂, adult: Upper parts yellowish-olive, brightest posteriorly; on the fore parts and head changing to pure ash, without any greenish tint whatever. No crown-patch of any different color. Lores, eye-ring, or frequently a decided superciliary stripe, whitish. Entire under parts dull white, scarcely or not tinged with yellowish. Wings and tail dusky, strongly edged with the color of the back, the outer tail-feathers frequently with an obscure whitish spot. Bill and feet dark. Length, 4½–4¾; wing about 2¾, long and pointed, the first quill as long as the next, and little difference between the first three or four quills. Tail extremely short, only two inches *or less;* such comparative lengths of wing and tail probably always serving to identify the species.

♀, adult: Quite like the male, but the ashy of the head less pure and clear, and the whole under parts more or less tinged with greenish-yellow.

Young: Entire upper parts strongly and uniformly yellowish-olive, like the back of the adult male, or even greener, this color also tinging the eye-ring and superciliary stripe. Whole under parts like those of the adult female, or even more decidedly greenish-yellow, leaving only the belly and crissum whitish. In such case, the species more closely resembles some others than the adults do; but the short tail, long wings, and absence of crown-patch, are distinctive.

THE Tennessee Warbler is scarcely entitled to a place here. Yet its westward dispersion is wider than is generally known or supposed, and there is no question that it reaches the Rocky Mountains of Colorado. There is an old record of the finding of the bird on the Upper Missouri by Mr. J. G. Bell, the famous taxidermist of New York, who accompanied Audubon up the river; and the Prinz Maximilian von Neu Wied described it from the same region under the name of "Sylvicola missuriensis". I have myself only found it along the eastern border of Dakota, where, however, it is extremely abundant during the migration, which is concluded in that latitude during the fore part of June. It is one of the numerous Eastern birds first discovered in Colorado by Mr. C. E. Aiken, who took it in El Paso County of that State, along with such decidedly Eastern species as Wilson's Bluebird, the Blue Yellow-backed Warbler, the Indigo-bird, Baltimore Oriole, Carolina Woodpecker, and the Dusky Duck (*Anas obscura*). No one else appears to have met with it so far west, nor has it yet been found fairly within the watershed of the Colorado. I consider it one of the less abundant Warblers of the Atlantic States; it is certainly much more numerous in the Valley of the Mississippi, its main belt of migration both in spring and fall. It is one of the three *Helminthophagæ* which proceed far beyond the United

States to breed, though it occasionally nests in the Northern States. In the opposite direction, it extends in winter to South America. For an account of its habits, I must refer to other treatises, though I may add that nothing I have read upon the subject indicates that the bird differs in any notable respect from others of the same genus.

Genus PEUCEDRAMUS Coues

Peucedramus, *Coues apud Hensh.* Zool. Expl. W. 100 Merid. "1875" (= 1876), 202. (Type *Sylvia olivacea* Giraud.)

CHARS.—General aspect of *Dendrœca.* Tongue much as in that genus, but larger, with revolute edges, cleft tip, and laciniate for some distance from the end. Wings elongated, half as long again as the tail (in *Dendrœca* but little longer than the tail), reaching, when folded, nearly to the end of the tail. Tail emarginate. Tarsus no longer than the middle toe and claw. Hallux little if any longer than its claw. Bill little shorter than tarsus (averaging little over half the tarsus in *Dendrœca*), attenuate, notably depressed, yet very little widened at base. Culmen rather concave than convex in most of its length, the under outline almost perfectly straight from extreme base to tip. Nasal fossæ very large, with a highly developed nasal scale. Rictal vibrissæ few and short. Plumage without streaks.

The form of the bill is peculiar, lacking entirely the Parine aspect of that of *Dendrœca;* it somewhat resembles that of *Siurus.* The relationships of *P. olivaceus* appear to be with the Jamaican *Sylvicola eoa* of Gosse. Certain *Certhia*-like peculiarities of habits have been noted by Mr. Henshaw. Professor Baird long ago called attention to the characters of this form in the following terms:—"The bill in this species is quite peculiarly slender and depressed, and the culmen is straighter than in any other *Dendroica.* The nostrils, too, are much more linear, and the wings unusually long. In these respects, as well as in pattern of coloration, it forms a very strongly marked section among the *Dendroicas,* even if not entitled to consideration as a separate genus." The ostensible date of the establishment of the genus is 1875, but the actual issue of the work in which it was characterized was delayed until the latter part of 1876; the first appearance of the name (without characterization) was in 1875 in Mr. Henshaw's other publication below cited. The genus, as far as known, embraces a single species.

The Olive Warbler

Peucedramus olivaceus

Sylvia olivacea, *Gir.* Sixt. Sp. Tex. B. 1841, 29, pl. 7, f. 2.—*Scl.* PZS. 1855, 66 (commentary).
Sylvicola olivacea, *Bd.* Stansb. Rep. GSL. 1852, 328.—*Cass.* Ill. 1855, 283, pl. 48.
Rhimamphus olivaceus, *Scl.* PZS. 1856, 291 (Mexico).
Dendroica olivacea, *Bd.* BNA. 1858, 305.—*Scl.* PZS. 1858, 295 (Cordova); 298 (Oaxaca).—*Bd.* Rev. AB. 1865, 205.—*B. B. & R.* NAB. i. 1874, 258, pl. 14, f. 4.—*Hensh.* Amer. Sportsman, v. Feb. 20, 1875, 328 (first actual introduction to U. S. fauna).
Dendrœca olivacea, *Scl.* PZS. 1859, 363 (Xalapa).—*Scl.* Cat. AB. 1861, 31.—*Salv.* Ibis, 2d ser. ii. 1866, 191 (Guatemala).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 610.—*Coues,* Key, 1872, 99.
Mniotilta olivacea, *Gray,* Handlist, i. 1869, 240, n. 3479.—*Gieb.* Nomencl. Av. 1875, 604.
Peucedramus olivaceus, *Coues apud Hensh.* Zool. Expl. W. 100 Merid. "1875" (= 1876), 202 (type of genus).
Peucedramus olivacea, *Hensh.* List B. Ariz. 1875, 156 (Arizona).
Sylvia tæniata, *Dubus,* "Bull. Acad. Brux. xiv. 1847, 104"; Revue Zoologique, 1848, 245.
Mniotilta tæniata, *Gray,* G. of B. i. 1848, 196.
Sylvicola tæniata, *Bp.* CA. i. 1850, 309.
Olive Warbler, Olive-backed Warbler, Olive-headed Warbler, Orange-breasted Warbler, *Authors.*

HAB.—Mexico. North to "Texas" (*Giraud*) and Arizona (*Henshaw*). South to Guatemala.

CH. SP.— ♂ *Capite et collo aurantio-brunneis, fasciâ latâ nigrâ per latera capitis ductâ; alis albo bifasciatis, speculo albo ad baseos primariorum.*

♂: Upper parts ashy, more or less olivaceous, changing to greenish on the nape. Head and neck all around orange-brown or intense saffron-yellow, with a broad black bar on the side of the head through the eyes. Wings blackish, the inner webs of all the quills edged with white, the outer webs of most of the primaries with whitish, and the outer webs of the secondaries with greenish; most of the primaries also marked with white on the outer webs at base, forming a conspicuous spot (only seen elsewhere in *D. cærulescens*, which is altogether different in other characters). Tail like the wings, with greenish edging of most of the feathers, the two outer ones on each side mostly or wholly white. Belly and sides whitish, tinged with olive or brownish. Length, about 4¾; wing, 3.00; tail, 2¼–2⅜; bill, ½; tarsus, ¾.

The female is described as having the saffron color much clearer yellowish, and shaded with olive-green on the crown; the black bar replaced by whitish, excepting a dusky patch on the auriculars. The very young bird does not appear to be known.

THE present is one of the "sixteen species" described and figured as new in 1841 by J. P. Giraud, and by him attributed to Texas. Doubt has been often expressed with reference to the ascribed *habitat* of these birds, the presumption being that some, if not all, of them actually came from contiguous Mexican territory. But it is well to bear in mind that their describer's declaration of their origin was unwavering to the last, and that his statement is gradually being borne out by the rediscovery of his species within our limits; while the Texan

side of the Valley of the Lower Rio Grande has afforded various species,* the existence of which in this region long remained unsuspected. Mr. Cassin redescribed and figured the species in 1855, since which time it has been generally enumerated among the birds of the United States; but, so far as I am aware, the first unequivocal testimony of its presence over our border has only been very recently afforded, by Mr. H. W. Henshaw, who took specimens in Arizona, and gave us our first information of the habits of the bird. The distribution of the species had meanwhile been traced southward through Mexico to Guatemala. The Baron Dubus, an ornithologist of Belgium, had examined a specimen from some portion of Mexico, and in 1847 had described it as a new species under the name of *Sylvia tæniata*. Baird had noted the bird from Popocatepetl and the alpine region of Orizaba, whence specimens reached the Smithsonian through Prof. F. E. Sumichrast, the well-known collector; while Sclater and Salvin had left records of the occurrence of the species in Cordova, Oaxaca, Xalapa, and Vera Paz.

Mr. Henshaw's narrative of his experiences with the bird is as follows:—"During a three days' visit to Mount Graham, August 1 to 4, the species was not detected; . . . . Returning here September 19, many of the species found in August in abundance had migrated south, and were either entirely wanting or represented by individuals from farther north, while the woods, the silence of which was often unbroken for long intervals by the note of a single bird, would now and then, as if by magic, be filled with hundreds of feathered migrants, who in noisy companies were proceeding on their way south. The day after establishing our camp here, Mr. Rutter, of the party, brought in a fine specimen of this warbler, which he stated he had shot from among a flock of Audubon's Warblers and Snow-

* Dr. James C. Merrill, Assistant Surgeon United States Army, lately found at Fort Brown, Texas, the following interesting species, all, with the exception of the Grebe, new to the fauna of the United States:—*Molothrus æneus*, *Nyctidromus albicollis*, *Pyrrhophæna riefferi*, *Amazilia cerviniventris*, *Parra gymnostoma*, and *Podiceps dominicus*. (See Bull. Nutt. Ornith. Club, i. n. 4, Nov. 1876, p. 88, and ii. n. 1, Jan. 1877, p. 26.) That the ornithological resources of our southern border are not yet exhausted may also be inferred from the fact that Mr. Henshaw alone added about a dozen species to the fauna of Arizona. Still later, Mr. George B. Sennett collected a Pigeon (*Leptoptila albifrons*) new to our fauna, near Fort Brown, Texas, as recorded by me, Bull. Nutt. Ornith. Club, ii. n. 3, for July, 1877, p. 82; besides the new *Parula* described on a preceding page, and a variety of *Myiarchus* not before recognized as an inhabitant of the United States.

birds, which he had started from the ground while walking in the pine woods. With the rest, it had apparently been feeding upon the ground, and had flown up to a low branch of a pine, where it sat and began to give forth a very beautiful song, which he described as consisting of detached, melodious, whistling notes. During the next few days, I confined my collecting-trips to the spruce woods, and though I watched eagerly for this to me strange warbler, I did not see it until the last day of my stay in the locality, when I heard a few strange Vireo-like notes coming from some thick pines, and, hurrying to the spot, soon had the satisfaction of seeing one of these warblers on the low limbs of a huge pine, where it was moving quickly over the large branches, its manner and whole appearance reminding me instantly of the Pine Creeper (*Dendroica pinûs*). A few moments later, a second specimen was shot from the top of a tall pine, where it was actively creeping about. As all the warblers present here at this time were migrants, we may reasonably infer that, with the others, this species was *en route* from some locality to the north, and perhaps it may be found to be a rare inhabitant of the high pine region throughout Arizona and New Mexico."

Genus DENDRŒCA Gray

Motacilla *and* **Sylvia,** in part, of early authors.

Sylvicola of *Swainson*, in part, and of many authors.—*Gray*, List of G. of B. 2d ed. 1841, 32. Not of *Humphreys*.

Dendroica, *Gray*, List of G. of B. 1841, App. sep. titled and paged, 1842, 8 (type *Motacilla coronata* L.).—*Bd.* N.A.B. 1858, 263.

Dendrœca, "*Agassiz*".—*Sund.* Oefv. K. Vetensk.-Akad. Förh. iii. 1869, 605 (monographic).

Dendræca, *Elliot*, Introd. to Illust. B.N.A. 18—, —.

Rimamphus, *Rafinesque*, "Am. Monthly Mag. iv. 1818, 39; Journ. de Phys. lxxxviii, 1819, 417". (Type *R. citrinus*, supposed to be *D. æstiva*. Name not available.)

Rhimamphus, *Hartl.* Revue Zoologique, 1845, 342.

Rhimanphus, *Gray*, "1848".—*Cab.* Mus. Hein. i. 1850, 19.

CHARS.—Bill variable in shape, usually conico-attenuate, more or less depressed at base, compressed from the middle; notched near the tip, not showing the extreme acuteness of that of *Helmintherus*, *Helminthophaga*, and *Protonotaria*. Rictus with obvious bristles, which are not evident in the true "worm-eating" Warblers. Tarsus longer than the middle toe and claw (it is shorter, or not longer, in *Mniotilta*). Hind toe little if any longer than its claw (decidedly longer in *Mniotilta* and *Parula*). Wings much longer than tail, pointed, 1st and 2d primaries longest. Tail moderate, with rather broad feathers, nearly even, but varying to slightly rounded, or with slight central emargination. Pattern of coloration indeterminate. Tail always with white blotches (except in *æstiva* and its immediate allies, where

the inner webs are yellow), never plain olivaceous. Crown never with lateral black stripes, nor under parts uniformly streaked with blackish on a pale ground, nor back with a yellow patch, nor whole head yellow. Length usually 5 or 6 inches; rarely under and perhaps never over these dimensions. Nest in trees or bushes, with rare exceptions. Eggs white, spotted.

It is not easy to frame a definition of this genus covering all its modifications, yet introducing no term inapplicable to any species; but the foregoing expressions considered collectively, however arbitrary or trivial some of them may seem to be, may serve to distinguish any *Dendrœca* from its allies of other genera; and, if so, the diagnosis is exclusively pertinent to group as conventionally accepted. The coloration of these birds, though indeterminate in most respects, is nevertheless a good clue to the genus; for the tail of every *Dendrœca* is blotched with white, excepting *D. æstiva* and its allies, in which it is bright yellow on the inner webs; and though several of the Worm-eating Warblers have white-blotched tails, these birds are easily distinguished by the acute, unnotched, and scarcely or not bristled bill; while the Creeping Warblers, *Mniotilta* and *Parula*, with white-spotted tail-feathers, have differently proportioned feet. No *Dendrœca* shows the special color-pattern which *Mniotilta*, *Parula*, *Protonotaria*, *Siurus*, *Oporornis*, and *Geothlypis* respectively exhibit; nor does any one of them present such a development of the rictal bristles as that seen in the group of Fly-catching Warblers, where, moreover, the bill is usually wider and more depressed at the base than it is in *Dendrœca*.

The names this genus has borne have been frequently changed. The earlier-described species were usually called *Motacilla* or *Sylvia*, the ineligibility of which names is too obvious to require comment. Next *Sylvicola* came into vogue; but this, as instituted by Swainson, belongs more particularly to the group afterward called *Parula*, and, in any event, is untenable, being long antedated by *Sylvicola* in conchology. The family name *Sylvicolidæ*, however, is still generally derived from this source, though Gray calls the family *Mniotiltidæ*, after Vieillot's genus *Mniotilla* or *Mniotilta*, and Cooper has lately named it *Dendrœcidæ*. Gray, in 1842, proposed the term *Dendroica*, Baird's adoption of which fixed it so firmly in our nomenclature, that a generation of American ornithologists have grown up who probably never think of using any other term. As far as I can see into the devices of nomenclature, it should

be retained in its emended form *Dendrœca;* the word being from the Greek δενδρον, *a tree*, and some one of the many words that group about οἰκεω, *I inhabit*, and οἰκος, *a house*—signifying a tree-tenant, or one who is at home in the trees, as all our Wood-warblers are, excepting perhaps *D. palmarum.*

For, as Baird showed in 1858, the only choice is between *Dendrœca*, and *Rimamphus* of Rafinesque, which latter, in the forms of *Rhimamphus* or *Rhimanphus*, has been used by Hartlaub and Cabanis. Rafinesque's description of the type of his genus, *R. citrinus*, from the Ohio, has been supposed to indicate the Summer Warbler, *D. œstiva*, and he doubtless had that species in the distorted perspective of his mental vision; but the description of his "Citron Open-bill", as he called it, is that of an imaginary if not altogether impossible bird, so faulty as to render the name unavailable for the purposes of science.

Dendrœca is the largest North American genus of birds, containing some thirty-five reputed species, nearly thirty of which are doubtless valid. No fewer than twenty-five of these have latterly been ascribed to North America; but two of them, "montana"* and "carbonata",† are not now substantiated by

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***Dendrœca montana.—Blue Mountain Warbler.**

Sylvia montana, *Wils.* AO. v. 1812, 113, pl. 44, f. 2 (Blue Mountains of Pennsylvania).—*Steph.* Gen. Zool. x. 1817, 736 (after Wilson).—*V.* Ency. Méth. ii. 1823, 451, n. 110 (from Wilson).—*Bp.* Journ. Phila. Acad. iv. 1824, 199.—*? ? Aud.* OB. v. 1839, 294, pl. 434, f. 3 (" California").

Sylvicola montana, *Jard.* "ed. Wils. 1832, —".—*? ? Aud.* Syn. 1839, 62.—*Nutt.* Man. i. 2d ed. 1840, 442.—*? ? Aud.* BA. ii. 1841, 69, pl. 98.—*Bp.* CA. i. 1850, 308.

Mniotilta montana, *Gray*, G. of B. i. 1848, 196.—*Giebel*, Nomenc. Av. ii. 1875, 604.

Dendroica montana, *Bd.* BNA. 1858, 278 (after Wilson).—*Bd.* Rev. AB. 1865, 190 (after Wilson).—*B. B. & R.* NAB. i. 1874, 271 (after Wilson).

Dendrocca montana, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 613.

Sylvia tigrina, *? Vieill.* OAS. ii. 1807, 34, pl. 94 (see under *tigrina* beyond, p. 245).—*Bp.* Ann. Lyc. N. Y. ii. 1826, 82 (after Wilson).—*Nutt.* Man. i. 1832, 393 (after Wilson).

Sylvicola tigrina, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 171 (ref. to Wilson).—*Bp.* CGL. 1838, 23.

Fauvette des Montagnes Bleues, *V.* Ency. Méth. ii. 1823, 451.

Blue Mountain Warbler *of Wilson, Nuttall, and Baird; whether of Audubon?*

HAB.—" Blue Mountains of Pennsylvania."

†Helminthophaga (?) carbonata.—Carbonated Warbler.

Sylvia carbonata, *Aud.* OB. i. 1831, 308, pl. 60.—*Nutt.* Man. i. 1832, 405.

Sylvicola carbonata, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.

Helinaia carbonata, *Aud.* Syn. 1839, 68.—*Aud.* BA. ii. 1841, 95, pl. 100.

Vermivora carbonata, *Bp.* CGL. 1838, 21.

Helmitheros carbonata, *Bp.* CA. i. 1850, 315.

Mniotilta carbonata, *Gray*, G. of B. i. 1848, 196.—*Giebel*, Nomenc. Av. ii. 1875, 600.

Dendroica carbonata, *Bd.* BNA. 1858, 287.—*Bd.* Rev. AB. 1865, 207.

Dendroeca carbonata, *Sund.* Oefv. K. Vetensk.-Akad. Förh. iii. 1869, 618.

Perissoglossa carbonata, *B. B. & R.* NAB. i. 1874, 214.

Carbonated Swamp Warbler, *Aud.* l. c.

Dusky Warbler, *Nutt.* l. c.

HAB.—" Kentucky."

known specimens, and "carbonata", moreover, may belong to another genus; while one, *olivacea*, only lately ascertained to occur within our borders, has been made the type of a separate genus. This leaves twenty-two valid United States species, as given in my "Key" in 1872, there having been no additions since that date to the genus *Dendrœca* itself, though several other Warblers have in the mean time been discovered and described. *Dendrœca tigrina*, made by Baird the type of a distinct genus *Perissoglossa* in 1865, I still retain in this genus, pending the question whether other Warblers may not share its supposed peculiarities. The principal extralimital species of the genus are the Cuban *D. pityophila*, the Jamaican *D. pharetra*, the Porto Rican *D. adelaidæ*, and the several species or races related to *D. æstiva*.

The beauty and variety of the genus are displayed to best advantage in the woodland of the Eastern United States, where the numerous species are conspicuous ornaments of the forest scene. In most portions of the United States, the Wood-warblers are migratory birds, coming with great regularity in the spring, each in its own time, abounding for a season, and then passing on to reappear in even greater profusion during the autumn. It is scarcely possible, however, to speak of them collectively in other than very general terms, such is the difference they present not only in their movements, but in the minor details of their habits and traits of character. To the regular periodicity of their movements may be ascribed in some measure the constancy of their specific characters, since none of them are long subjected to the modifying influences of particular localities. Some species, like *dominica*, are quite southerly in their distribution; a few, like *discolor* and *pinûs*, breed southerly as well as farther north, and are as well known at large during the breeding season as at any other time. Most of them, however, push the spring migration to higher latitudes, scarcely resting content south of the latitude of Massachusetts, unless it be that they are satisfied to nestle upon the higher elevations of the Alleghanies. Few remain with us during the winter, and these only linger along our southern border; but the hardy and resolute Yellow-rumps are an exception to this statement, as they abound over at least the southern half of the United States throughout the most inclement seasons. The rest find more congenial winter homes beyond our border; some in the West Indies, others again in Mexico, and yet others in

Central and even South America. Some of the Warblers that push farthest north in spring are also those that penetrate farthest into South America, it being not at all a question of balancing a far-north spring migration with a less extended return movement in the fall. The passage of the Warblers keeps the collectors busy, and thousands, doubtless, of these delicate and attractive birds meet their fate each year in this way. The great variability in color, according to age, sex, or season, which nearly all the species display, no less than their real beauty, encourages the acquisition of large suites of specimens, and stimulates the collector to rival his fellows in the possession of the most highly plumaged spring males, or in the discovery of some of those indifferently feathered females and young which sometimes puzzle the most expert ornithologists; and almost every local collection may boast its Warbler prize. In the breeding season, especially in New England and other northerly portions of the United States, the riper and more thoughtful naturalist, less avaricious of mere possession, finds ample scope for the exercise of his craft in his leisurely studies of the habits of Warblers and his diligent search for their nests. Nor was it long since that the nest and eggs of many of the commonest species were rarities or even novelties, so slowly did we acquire our knowledge of this kind; and even now so much remains to be ascertained, that the field may be considered open to the diligence and ability of whoso may will to enter it.

Only a single species of *Dendrœca*—the familiar and ubiquitous Summer Warbler—ranges regularly across the continent, though each side occasionally receives a straggler from the other, like *D. coronata* and *D. townsendi*. The abundance of the genus in the East contrasts sharply with its poverty in the West. Audubon's Warbler is the most numerously and widely diffused species, corresponding to the Yellow-rump of the East. *D. nigrescens*, which may perhaps be considered to represent *D. cœrulescens*, is another common species. The Eastern *D. virens* is the type and only representative of a little subgroup, which, in the West, furnishes no fewer than three species; though *chrysoparia* can hardly be called Western, as it only reaches Texas, *D. occidentalis* and *D. townsendi* being the representatives of the *virens* group in other parts of the West. Finally, the Eastern *D. dominica* is replaced in the Southwest by the lately discovered Grace's Warbler.

In drawing comparisons between the Eastern and Western

representation of *Dendrœca*, however, we should not forget that several Eastern species, properly speaking, are not so exclusively restricted as has long been supposed. The recent thorough ransacking of the mountains of Colorado, by several well-trained ornithologists, has shown that various species reach across the Plains to the Rocky Mountains, and even penetrate their fastnesses—not as mere stragglers, but as regular migrants. Such species are *D. striata*, *D. cœrulea*, *D. blackburniæ*, and *D. maculosa*, which I shall consequently include in the main text of the present work, as reaching the confines of the Colorado watershed.

FIG. 32.—Black-throated Green Warbler, natural size.

The North American species of *Dendrœca* which are not known to come within such limit are the following:—

Dendrœca virens.—Black-throated Green Warbler.

Motacilla virens, *Gm.* SN. i. 1788, 985, n. 1541 (Edw. pl. 300, etc.).—*Turt.* SN. i. 1806, 607.

Sylvia virens, *Lath.* IO. ii. 1790, 537, n. 112.—*Vieill.* OAS. ii. 1807, 33, pl. 92.—*Wils.* AO. ii. 1810, 127, pl. 17, f. 3.—*V.* N. D. d'H. N. xi. 1817, 179.—*Steph.* Gen. Zool. x. 1817, 740.—*V.* Ency. Méth. ii. 1823, 440, n. 73.—*Bp.* Journ. Phila. Acad. iv. 1824, 192.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 80.—*Nutt.* Man. i. 1832, 376, fig.—*Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 57.—*Aud.* OB. iv. 1838, 70, pl. 399.—*Peab.* Rep. Orn. Mass. 1839, 308.—*Thomps.* Vermont, 1853, 81.—*Gätke*, "Naum. 1858, 423" (Heligoland, Europe).

Sylvicola virens, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.—*Bp.* CGL. 1838, 22.—*Aud.* Syn. 1839, 55.—*Aud.* BA. ii. 1841, 42, pl. 84.—*Gir.* BLI. 1844, 57.—*Bp.* CA. i. 1850, 307.—*Woodh.* Rep. Zuñi R. 1853, 70 (Texas and Indian Terr.).—*Hoy*, Pr. Phila. Acad. vi. 1853, 310.—*Read*, Pr. Phila. Acad. 1853, 398.—*Reinh.* "Vid. Med. for 1853, 1854, 72, 81".—*Reinh.* J. f. O. 1854, 426 (Greenland).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 583.—*Brew.* Pr. Bost. Soc. 1856, 6.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Bry.* Pr. Bost. Soc. vi. 1857, 116 (Nova Scotia).—*Willis*, Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Hoy*, Smiths. Rep. for 1864, 1865, 438.—*Trippe*, Pr. Ess. Inst. vi. 1871, 114.

Mniotilta virens, *Gray*, G. of B. i. 1848, 196.—*Cabot*, Naum. ii. Heft iii. 1852, 65.—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Reinh.* Ibis, iii. 1861, 5 (Greenland).

Rhimanphus virens, *Cab.* MH. i. 1850, 19.

Rhimanphus virens, *Gundl.* J. f. O. 1855, 474 (Cuba).—*Scl.* PZS. 1856, 291 (Mexico).

Dendroica virens, *Bd.* B. N. A. 1858, 267.—*Scl.* PZS. 1858, 295 (Cordova).—*Scl.* PZS. 1859, 373 (Oaxaca).—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 293 (New Granada).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 407.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Verr.* Pr. Ess. Inst. iii. 1862, 146.—*Allen*, Pr. Ess. Inst. iv. 1864, 61.—*Bd.* Rev. AB. 1865, 182.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe*, Am. Nat. ii. 1868, 173.—*Turnb.* B. E. Pa. 1869, 24; Phila. ed. 17.—*Haym.* Cox's Surv. Indiana, 1869, 217.—*Sumich.* Mem. Bost. Soc. i. 1869, 546 (Vera Cruz).—*v. Frantz.* J. f. O. 1869, 293 (Costa Rica).—*Gundl.* J. f. O. 1872, 413 (Cuba).—*B. B. & R.* NAB. i. 1874, 261, pl. 12, f. 4.—*Brewst.* Ann. Lyc. N. Y. xi. 1875, 135.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.

Dendrœca virens, *Scl.* PZS. 1859, 363 (Xalapa).—*S. & S.* PZS. 1864, 347 (Panama).—*Scl.* Ibis, 2d ser. i. 1865, 89 (critical).—*Dress.* ibid. 477 (San Antonio).—*McIlwr.* Pr. Ess. Inst. v. 1866, 85.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Coues*, Pr. Bost. Soc. xii. 1868, 110.—*Coues*, Pr. Ess. Inst. v. 1868, 272.—*Allen*, Am. Nat. iii. 1869, 509.—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 611.—*Salv.* PZS. 1870, 182 (Veragua).—*Cope*, Am. Nat. iv. 1870, 395, 396, 399.—*Coues*, Key, 1872, 97, f. 39.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 363.—*Trippe*, Am. Nat. vi. 1872, 47, 48.—*Herrick*, Bull. Ess. Inst. v. 1873, —.—*Trippe*, Pr. Bost. Soc. xv. 1873, 234.—*Coues*, BNW. 1874, 54.—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 15 (Tehuantepec).—*Gentry*, Life-Hist. 1876, 102.—*Minot*, B. N. Engl. 1877, 117.—*Merr.* Trans. Conn. Acad. iv. 1877, 15.

Dendrœca ——?, *S. & S.* Ibis, ii. 1860, 273 = *virens* ♀.

Black-throated Green Flycatcher, *Edw.* Gl. ii. 190, pl. 300.

Figuier à gorge noir de Pensilvanie, Ficedula pensilvanica gutture nigro, *Briss.* Orn. vi. 1760, App. 104, n. 77.

Figuier à cravatte noir, *Buf.* "v. 298".

Green Warbler, *Penn.* AZ. ii. 1785, 404, n. 297.—*Lath.* Syn. ii. pt. ii. 1783, 484, n. 108.

Parus viridis gutture nigro, *Bart.* Trav. Fla. 1791, 292.

Fauvette à cravate noire, *V.* EM. ii. 1823, 440.—*Le Moine*, Ois. Canad. 1861, 196.

Black-throated Green Warbler, *Authors.*

HAB.—Eastern Province of the United States and temperate British America. West only to the edge of the Plains (Missouri, Kansas, Indian Territory, and Texas). North casually to Greenland. South to Panama. Migratory only in most parts of the United States. Breeds from the higher portions of the Middle States, and from New England, northward. Winters in Mexico, Central America, and also in Cuba (alone of the West Indies). Accidental in Europe (Heligoland, *Gätke*, as above cited).

Dendrœca chrysoparia.—Golden-cheeked Warbler.

Dendrœca chrysoparia, *S. & S.* PZS. 1860, 298 (Guatemala; not of PZS. 1862, 19).—*S. & S.* Ibis, ii. 1860, 273 (Vera Paz, Guatemala).—*Scl.* Ibis, i. 2d ser. 1865, 89 (critical).—*Dress.* Ibis, 1865, 477 (Medina River, Texas).

Dendroica chrysoparcia, *Bd.* Rev. AB. i. 1865, 183, 267.—*B. B. & R.* N. A. B. i. 1874, 260, pl. 12, f. 6.

Dendrœca chrysoparcia, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 610.—*Coop.* B. Cal. i. 1870, 193, fig.—*Coues*, Key, 1872, 98.

Mniotilta chrysoparcia, *Gray*, H.-L. i. 1869, 241, n. 3494.—*Gieb.* Nomenc. Av. ii. 1875, 601.

HAB.—Texas to Guatemala.

Dendrœca cœrulescens.—Black-throated Blue Warbler.

Motacilla canadensis, *L.* SN. i. 1766, 336, n. 42 (from Briss. iii. 527, pl. 27, f. 6, and Edw. v. pl. 252, f. 1.—Not the bird of same name on p. 334, which is *D. coronata*).—*Bodd.* Tabl. PE. 1783, 43 (PE. 685, f. 2).—*Gm.* SN. i. 1788, 991. n. 42 (same bases, with addition of *Black-throated Warbler* of Penn. and Lath.).—*Turt.* SN. i. 1806, 611.

Sylvia canadensis, *Lath.* IO. ii. 1790, 539, n. 117.—*Wils.* AO. ii. 1810, 115, pl. 15, f. 7.—*Bp.* Journ. Phila. Acad. iv. 1824, 191.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 84.—*Nutt.* Man. i. 1832, 398.—*Aud.* OB. ii. 1834, 309, pls. 148, 155.—*Peab.* Rep. Orn. Mass. 1839, 311.—*Thomps.* Vermont, 1853, 83.

Phyllopneuste canadensis, *Boie,* Isis, 1828, 321.

Sylvicola canadensis, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.—*Bp.* CGL. 1838, 23.—*Aud.* Syn. 1839, 61.—*Aud.* BA. ii. 1841, 63, pl. 95.—*Gir.* BLI. 1844, 56.—*Gosse,* B. Jam. 1847, 160.—*Denny,* PZS. 1847, 38.—*Bp.* CA. i. 1850, 308.—*Woodh.* Sitgr. Rep. Zuñi and Colo. R. 1853, 71.—*Read,* Pr. Phila. Acad. vi. 1853, 399.—*Hoy,* ibid. 311.—*Henry,* Pr. Phila. Acad. vii. 1855, 309.—*Kenn.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Pratten,* ibid. 602.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Sallé,* PZS. 1857, 231 (San Domingo).—*Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Albrecht,* J. f. O. 1861, 53 (Bahamas).—*Hoy,* Smiths. Rep. for 1864, 1865, 438.—*Bry.* Pr. Bost. Soc. xi. 1867, 91 (San Domingo).—*Trippe,* Pr. Ess. Inst. vi. 1871, 114.

Mniotilta canadensis, *Gray,* G. of B. i. 1848, 196.—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.

Rhimamphus canadensis, *Gundl.* J. f. O. 1855, 473 (Cuba).—*Gundl.* J. f. O. 1861, 408 (Cuba).

Dendroica canadensis, *Bd.* BNA. 1858, 271.—*Henry,* Pr. Phila. Acad. xi. 1859, 106.—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 407.—*Verr.* Pr. Ess. Inst. iii. 1862, 146.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*March,* Pr. Phila. Acad. xv. 1863, 293.—*Allen,* Pr. Ess. Inst. iv. 1864, 62.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe,* Am. Nat. ii. 1868, 172.

Dendrœca canadensis, *Scl.* PZS. 1861, 70 (Jamaica).—*Albrecht,* J. f. O. 1862, 193 (Jamaica).—*Dress.* Ibis, 2d ser. i. 1865, 478 (Texas).—*McIlwr.* Pr. Ess. Inst. v. 1866, 85.—*Trippe,* Am. Nat. vi. 1872, 47.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235.

Motacilla cærulescens, *Gm.* SN. i. 1788, 960, n. 74 (Buff. v. 164; Lath. Syn. ii. pt. ii. 440, n. 35).—*Turt.* SN. i. 1806, 590.—*Less.* Tr. Orn. i. 1831, 419.

Sylvia cærulescens, *Steph.* Gen. Zool. x. 1817, 651.—*V.* Ency. Méth. ii. 1823, 432, n. 44.—*D'Orb.* Ois. Cuba, 1839, 63, pl. 9, f. 1, 2 (Cuba).

Dendroica cærulescens, *Bd.* Rev. AB. 1865, 186.—*Gundl.* J. f. O. 1872, 413 (Cuba).—*B. B. & R.* NAB. i. 1874, 254, pl. 12, f. 10, 11.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.

Dendrœca cærulescens, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 610.—*Coues,* Key, 1872, 99.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 363.—*Mayn.* B. Fla. 1873, 54.—*Merr.* Am. Nat. viii. 1874, 87.—*Gentry,* Life-Hist. 1876, 105.—*Jones,* Bull. Nutt. Club, i. 1876, 11 (breeding).—*Minot,* B. N. Engl. 1877, 115.—*Merr.* Tr. Conn. Acad. iv. 1877, 15.

Sylvia cœrulescens, *Lath.* IO. ii. 1790, 520, n. 39.—*V.* OAS. ii. 1807, 25, pl. 80.—*V.* N. D. d'H. N. xi. 1817, 168.

Dendrœca cœrulescens, *Coues,* Pr. Bost. Soc. xii. 1868, 110.—*Coues,* Pr. Ess. Inst. v. 1868, 272.—*Cope,* Am. Nat. iv. 1870, 395, 399.—*Coues,* BNW. 1874, 55.

Dendroica cœrulescens, *Turnb.* B. E. Pa. 1869, 24; Phila. ed. 17.

Mniotilta coerulescens, *Gieb.* Nomenc. Av. ii. 1875, 602.

Sylvia pusilla, *Wils.* AO. v. 1812, 100, pl. 43, f. 4 (♀. Not of same work, iv. 1811, 17, pl. 28, f. 3, which is *Parula americana*).—*Bp.* Journ. Phila. Acad. iv. 1824, 197.

Sylvicola pusilla, *Denny,* PZS. 1847, 38.

Sylvia leucoptera, *Wils.* "Index, and 2d ed. (Hall's ed.) ii. 390" (♀ renamed).

Sylvia palustris, *Steph.* Shaw's Gen. Zool. x. 1817, 722 (♀ renamed).

Sylvia macropos, *Vieill.* Ency. Méth. ii. 1823, 451, n. 112 (♀ renamed).

Mniotilta macropus, *Gray,* G. of. B. i. 1848, 196.

Sylvia sphagnosa, *Bp.* Journ. Phila. Acad. iv. 1824, 199 (♀ renamed).—*Bp.* Ann. Lyc. N. Y. ii. 1826, 85.—*Nutt.* Man. i. 1832, 406.—*Aud.* OB. ii. 1834, 279.

Vireo sphagnosa, "*Jardine*". (See Brewer's 12mo. ed. of Wilson, Boston, 1840, 393.)

Sylvicola pannosa, *Gosse,* B. Jam. 1847, 162 (♀).—*Gosse,* Ill. B. Jam. 1849, pl. 37.

Mniotilta pannosa, *Gray,* G. of B. i. 1848, 196.

Dendrœca pannosa, *Scl.* PZS. 1861, 71.—*Albrecht,* J. f. O. 1862, 193.

Blue Flycatcher, *Edw.* Gl. pl. 252, f. 1 (= *M. canadensis* Linn. p. 336).

Petit Figuier cendré de Canada, Ficedula canadensis cinerea minor, *Briss.* Orn. iii. 1760, 527, pl. 27, f. 6 (= *M. canadensis* L. p. 336).

Figuier cendré du Canada, *Buff.* PE. 685, f. 2.

Figuier bleu, *Buff.* "v. 304", *or* "ix. 446" (PE. 685, f. 2) (= *M. canadensis* Linn. p. 336).

Fauvette bleuâtre de S. Domingue, *Buff.* "Hist. Nat. Ois. v. 164" (= *M. cœrulescens* Gm.)

Blue-grey Warbler, *Lath.* Syn. ii. pt. ii. 1783, 440, n. 35 (= *M. cærulescens* Gm.).
Black-throated Warbler, *Lath.* Syn. ii. 1783, 487, n. 113.—*Penn.* A.Z. ii. 1785, 399, n. 285.
Fauvette bleuâtre, *V.* l. c. 1817.
Fauvette des pins marécageux, *V.* EM. ii. 1823, 451 (♀).
Bec-fin bleuâtre, *D'Orb.* l. c.
Olive Warbler, *Gosse,* l. c. (♀).
Black-throated Blue Warbler, Canadian Warbler, Pine-swamp Warbler, *Authors.*

NOTE.—Though so extensive, the synonymy of this species is perfectly plain. There were two early sources of names, both referring to the Black-throated Blue ♂. One of these was Edwards's "Blue Flycatcher", which became *M. canadensis* L., auct.; the other was Buffon's "Fauvette bleuâtre de St. Domingue", which made *M. cærulescens* Gm., auct. It is required to adopt the latter and later name, because there is another, prior, *M. canadensis* L. = *coronata.* The very differently-colored olivaceous ♀ did not appear till Wilson, who called it *S. pusilla,* a name he had, however, already given to the *Parula.* Perceiving this double employ, several authors hastened to propose names; whence *leucoptera* of Wilson's "Index", *palustris* Steph., *macropos* V., and *sphagnosa* Bp.—all mere renames; Gosse, however, discovered and named the ♀ *pannosa* independently.

HAB.—Eastern Province of North America, including most of British America; its United States range closely coincident with that of *D. virens.* (Accredited to the Upper Missouri by *Audubon.*) Breeds from New England, and doubtless from higher portions of the Middle States, northward. Migratory in most of the United States. Winters in Southern Florida (*Maynard*), and in various of the West India Islands (Bahamas, Cuba, Jamaica, and San Domingo); no Mexican nor Central American record, the winter range being thus very different from that of *D. virens.*

Dendrœca castanea.—Bay-breasted Warbler.

Sylvia castanea, *Wils.* AO. ii. 1810, 97, pl. 14, f. 4.—*Steph.* Gen. Zool. x. 1817, 714.—*V.* Ency. Méth. ii. 1823, 452, n. 113.—*Bp.* Journ. Phila. Acad. iv. 1824, 189.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 80.—*Nutt.* Man. i. 1832, 382.—*Aud.* OB. i. 1832, 358, pl. 69.—*Peab.* Rep. Orn. Mass. 1839, 309.

Sylvicola castanea, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.—*Bp.* CGL. 1838, 22.—*Aud.* Syn. 1839, 53.—*Aud.* BA. ii. 1841, 34, pl. 80.—*Bp.* CA. i. 1850, 308.—*Hoy,* Pr. Phila. Acad. vi. 1853, 311.—*Read,* ibid. 398.—*Pratten,* Tr. Ill. Agric. Soc. i. 1855, 601.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Hoy,* Smiths. Rep. for 1864, 1865, 438 (Missouri).

Mniotilta castanea, *Gray,* G. of B. i. 1848, 196.

Rhimanphus castaneus, *Cab.* MH. i. 1850, 19.

Dendroica castanea, *Bd.* BNA. 1858, 276.—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*Cass.* Pr. Phila. Acad. xii. 1860, 193 (Isthmus of Darien).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 407.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Verr.* Pr. Ess. Inst. iii. 1862, 147.—*Allen,* Pr. Ess. Inst. iv. 1864, 62.—*Bd.* Rev. AB. 1865, 189.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe,* Am. Nat. ii. 1868, 173, 179.—*Turnb.* B. E. Pa. 1869, 25; Phila. ed. 18.—*Brew.* Pr. Bost. Soc. xv. 1872, 192.—*B. B. & R.* NAB. i. 1874, 251, pl. 13, f. 4, 5.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.

Dendrœca castanea, *Lawr.* Ann. Lyc. vii. 1861, 322 (New Granada).—*S. & S.* PZS. 1864, 347 (Panama).—*McIlwr.* Pr. Ess. Inst. v. 1866, 86.—*Coues,* Pr. Ess. Inst. v. 1868, 272.—*Coues,* Pr. Bost. Soc. xii. 1868, 110.—*Allen,* Am. Nat. iii. 1869, 578.—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 614.—*Mayn.* Guide, 1870, 103.—*Wyatt,* Ibis, 2d ser. i. 1871, 322 (Naranjo).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 361.—*Brew.* Ibis, 3d ser. ii. 1872, 334 (migrations).—*Coues,* Key, 1872, 101.—*Coues,* BNW. 1874, 61.—*Gentry,* Life-Hist. i. 1876, 117.—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 15 (Tehuantepec).—*Minot,* B. N. Engl. 1877, 108.—*Merr.* Trans. Conn. Acad. iv. 1877, 16.

Sylvia autumnalis, *Wils.* AO. iii. 1811, 65, pl. 23, f. 3.—*Steph.* Gen. Zool. x. 1817, 632.—*V.* Ency. Méth. ii. 1823, 448, n. 102.—*Bp.* Journ. Phila. Acad. iv. 1824, 195.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 84.—*Nutt.* Man. i. 1832, 390.—*Aud.* OB. i. 1832, 449, pl. 88.—*Peab.* Rep. Orn. Mass. 1839, 310.—*Lawr.* Ann. Lyc. N. Y. v. 1852, 223.

Fauvette à poitrine rougeâtre, *V.* EM. ii. 1823, 452.
Fauvette d'automne, *V.* Ency. Méth. ii. 1823, 448.
Fauvette à gorge baie, *Le Moine,* Ois. Canad. 1861, 205.
Bay-breasted Warbler, Autumnal Warbler, *Authors.*

Hab.—Closely correspondent to that of *D. striata,* but less extensive. Eastern Province of North America; north to Hudson's Bay (not Alaska nor Greenland); west only to the edge of the Plains. Migratory only in nearly all of the United States. Breeds from Northern New England northward. Winters in Central and northernmost South America (no other extralimital record).

Dendrœca pennsylvanica.—Chestnut-sided Warbler.

Motacilla pensylvanica, *L.* SN. i. 1766, 333, n. 19 (Edw. pl. 301).—*Turt.* SN. i. 1806, 596.
Sylvia pensylvanica, *Lath.* IO. ii. 1790, 540, n. 120.
Dendroica pensylvanica, *Parker,* Am. Nat. v. 1871, 168.—*Packard,* Am. Nat. viii. 1874, 271.—*Stark,* Am. Nat. viii, 1874, 756 (breeding in West Virginia).
Dendrœca pensylvanica, *Ridgw.* Am. Nat. vii. 1873, 199.
Motacilla pensilvanica, *Gm.* SN. i. 1788, 971, n. 19.
Sylvia pennsylvanica, *Wils.* AO. ii. 1810, 99, pl. 14, f. 5.—*Bp.* Journ. Phila. Acad. iv. 1824, 189.
Mniotilta pennsylvanica, *Gray,* G. of B. i. 1848, 196.—*Cabot,* Naum. ii. Heft iii. 1852, 66 (Lake Superior).

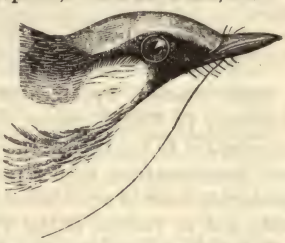

Fig. 33.—Chestnut-sided Warbler.

Dendroica pennsylvanica, *Bd.* BNA. 1858, 279.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 408.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Verr.* Pr. Ess. Inst. iii. 1862, 147.—*Hayd.* Rep. Tr. Amer. Philos. Soc. xii. 1862, 161 (Platte River).—*Allen,* Pr. Ess. Inst. iv. 1864, 63.—*Bd.* Rev. AB. 1865, 191.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe,* Am. Nat. ii. 1868, 173.—*v. Frantz.* J. f. O. 1869, 293 (Costa Rica).—*Turnb.* B. E. Pa. 1869, 25; Phila. ed. 18.—*B. B. & R.* NAB. i. 1874, 245, pl. 13, f. 7, 8.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.
Dendrœca pennsylvanica, *S. & S.* Ibis, ii, 1860, 273 (Cobau).—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 322 (New Granada).—*S. & S.* PZS. 1864, 347 (Panama).—*McIlwr.* Pr. Ess. Inst. v. 1866, 86.—*Salv.* PZS. 1867, 136 (Veragua).—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Coues,* Pr. Bost. Soc. xii. 1868, 110.—*Coues,* Pr. Ess. Inst. v. 1868, 273.—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200 (Yucatan).—*Salv.* PZS. 1870, 182 (Veragua).—*S. & S.* PZS. 1870, 836 (Honduras).—*Coues,* Key, 1872, 101, f. 43.—*Allen,* Am. Nat. vi. 1872, 265.—*Allen,* Bull. MCZ. iii. 1872 (Kansas).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 366.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235.—*Coues,* BNW. 1874, 62.—*Gentry,* Life-Hist. i. 1876, 120.—*Minot,* B. N. Engl. 1877, 106.—*Merr.* Trans. Conn. Acad. iv. 1877, 17.
Sylvicola pennsylvanica, *Trippe,* Pr. Ess. Inst. vi. 1871, 114 (Minnesota).
Motacilla icterocephala, *L.* SN. i. 1766, 334, n. 25 (Briss. iii. 517).—*Gm.* SN. i. 1788, 980, n. 25.—*Turt.* SN. i. 1806, 603.
Sylvia icterocephala, *Lath.* IO. ii. 1790, 538, n. 113.—*V.* OAS. ii. 1807, 31, pl. 90.—*V.* N. D. d'H. N. xi. 1817, 223.—*Steph.* Gen. Zool. x. 1817, 622.—*V.* Ency. Méth. ii. 1823, 441, n. 80.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 80.—*Aud.* OB. i. 1832, 306, pl. 59.—*Nutt.* Man. i. 1832, 380.—*Peab.* Rep. Orn. Mass. 1839, 309.—*Thomps.* Vermont, 1853, 82.
Sylvicola icterocephala, *Rich.* Rep. Brit. Assoc. for 1836, 1837, 172.—*Bp.* CGL. 1838, 22.—*Aud.* Syn. 1839, 54.—*Aud.* BA. ii. 1841, 35, pl. 81.—*Bp.* CA. i. 1850, 308.—*Hoy,* Pr. Phila. Acad. vi. 1853, 30.—*Read,* ibid. 398.—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Pratten,* ibid. 602.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Brew.* Pr. Bost. Soc. vi. 1856, 6.—*Bry.* Pr. Bost. Soc. vi. 1857, 116 (Nova Scotia).—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Albrecht,* J. f. O. 1861, 153 (Bahamas).—*Hoy,* Smiths. Rep. for 1864, 1865, 438 (Missouri).
Dendrœca icterocephala, *Scl.* PZS. 1859, 363 (Xalapa).—*Cab.* J. f. O. 1860, 328 (Costa Rica).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 612.—*Cope,* Am. Nat. iv. 1870, 395, 396.
Dendroica icterocephala, *Scl.* PZS. 1869, 374 (Oaxaca).

Mniotilta icterocephala, *Gieb.* Nomenc. Av. ii. 1875, 603.
Red-throated Flycatcher, *Edw.* Gl. ii. 193, pl. 301 (= *M. pensylvanica* L.).
Red-throated Warbler, *Lath.* Syn. ii. pt. ii. 1783, 490, n. 116 (after Edwards).
Figuier à poitrine rouge, *Buff.* "v. 308".
Figuier à teste jaune de Canada, Ficedula canadensis icterocephalos, *Briss* Orn. iii. 1760, 517, n. 64, pl. 27, f. 2 (descr. orig. = *M. icterocephala* L.).
Figuier à tête jaune de Canada, *Buff.* "v. 299".
Figuier à teste jaune de Pensilvanie, Ficedula pensilvanica icterocephalos, *Briss.* Orn. vi. 1760, App. 105 (after Edwards).
Quebec Warbler, *Penn.* AZ. ii. 1785, 408, n. 305.—*Lath.* Syn. ii. pt. ii. 1783, 484, n. 109.
Yellow-crowned Warbler, *Steph.* l. c. *nec auct.*
Fauvette à tête jaune, *V.* N. D. d'H. N. xi. 1817, 223.—*V.* Ency. Méth. ii. 1823, 441.
Fauvette aux côtés chataines, *Le Moine,* Ois. Canad. 1861, 206.
Chestnut-sided Warbler, *Authors.*

NOTE.—There are two independent early sources of names here. One is the Edwards's "Red-throated Flycatcher", pl. 301, which became *M. pensylvanica* L., auct. The other is Brisson's "Figuier à teste jaune de Canada", which became *M. icterocephala* L., auct. Note that the bird may have received the epithet "Bloody-sided" from some; but that, nevertheless, the "Bloody-sided Warbler" of Latham and Pennant is quite another bird, to wit, *Sylvia ruficapilla* Lath. 1790, a West Indian variety of *D. petechia* of the *D. æstiva* group; and that it is the "Quebec Warbler" of Pennant and Latham that = *icterocephala* L.

HAB.—Eastern Province, United States and Canada. West only to the edge of the Plains, and scarcely north of the United States. Breeds abundantly in New England, and doubtless also in the Middle States. Winters entirely extralimital. South in portions of Mexico (Xalapa, Oaxaca, *Sclater*, though it is stated in Hist. NAB. i. 245, that it is not recorded from Mexico); Honduras, Costa Rica, and Guatemala to Panama, and probably farther. Bahamas alone of the West Indies.

Dendrœca tigrina.—Cape May Warbler.

Motacilla tigrina, *Gm.* SN. i. 1788, 985, n. 153 (Edw. pl. 257, &c.).—*? Turt.* SN. i. 1806, 606.
Sylvia tigrina, *Lath.* IO. ii. 1790, 537, n. 110.—*V.* OAS. ii. 1807, 34, pl. 94 (Baird makes this = *montana* Wils.; but V. quotes himself as = *tigrina* Gm.).—*V.* N. D. d'H. N. xi. 1817, 228.—*Steph.* Gen. Zool. x. 1817, 738.—*V.* Ency. Méth. ii. 1823, 428, n. 30 (quotes Edw., Buff., and Briss., and his own OAS. ii. 34, pl. 94).
Mniotilta tigrina, *Gray,* G. of B. i. 1848, 196.
Sylvicola tigrina, *Bry.* Pr. Bost. Soc. xi. 1867, 91 (San Domingo).
Dendroica tigrina, *Bd.* BNA. 1858, 286.—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 408.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Verr.* Pr. Ess. Inst. iii. 1862, 157.—*March,* Pr. Phila. Acad. xv. 1863, 293 (Jamaica).—*Allan,* Pr. Ess. Inst. iv. 1864, 63.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe,* Am. Nat. ii. 1868, 175.—*Turnb.* B. E. Pa. 1869, 25; Phila. ed. 18.—*Orton,* Am. Nat. iv. 1871, 714.
Dendrœca tigrina, *Scl.* PZS. 1861, 71 (Jamaica).—*Albrecht,* J. f. O. 1862, 193 (Jamaica).—*McIlvr.* Pr. Ess. Inst. v. 1866, 86 (Canada West).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 616.—*Coues,* Key, 1872, 102.—*Mayn.* B. Fla. 1873, 55.—*Gentry,* Life-Hist. i. 1876, 127.—*Merr.* Tr. Conn. Acad. iv. 1877, 17.
Perissoglossa tigrina, *Bd.* Rev. AB. 1865, 181.—*Coues,* Pr. Ess. Inst. v. 1868, 274.—*Coues,* Pr. Bost. Soc. xii. 1868, 109.—*Allen,* Am. Nat. iii. 1869, 578.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 368.—*Gundl.* J. f. O. 1872, 412 (Cuba).—*B. B. & R.* NAB. i. 1874, 212, pl. 12, f. 1, 2.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Minot,* B. N. Engl. 1877, 102.
Sylvia maritima, *Wils.* AO. vi. 1812, 99, pl. 54, f. 3 (♂).—*Steph.* Gen. Zool. x. 1817, 739.—*Bp.* Journ. Phila. Acad. iv. 1824, 200.—*Bp.* AO. i. 1825, 32, pl. 3, f. 3.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 79.—*Aud.* OB. v. 1839, 156, pl. 414.—*Nutt.* Man. i. 1832, 371.—*D'Orb.* Ois. Cuba, 1839, 70, pl. 10.

Sylvicola maritima, *Jard.* "ed. Wils. 1832".—*Bp.* CGL. 1838, 22.—*Aud.* Syn. 1839, 56.—*Nutt.* Man. i. 2d ed. 1840, 424.—*Aud.* BA. ii. 1841, 44, pl. 85.—*Bp.* CA. i. 1850, 307.—*Hoy,* Pr. Phila. Acad. vi. 1853, 311 (Wisconsin).—*Read,* ibid. 398.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Albrecht,* J. f. O. 1861, 53 (Bahamas).

Certhiola maritima, *Gosse,* B. Jam. 1847, 87.—*Gosse,* Ill. B. Jam. 1849, pl. 17.

Mniotilta maritima, *Gray,* G. of B. i. 1848, 196.—*Cabot,* Naum. ii. Heft iii. 1852, 66 (Lake Superior).

Rhimamphus maritimus, *Gundl.* J. f. O. 1855, 474 (Cuba).—*Gundl.* J. f. O. 1861, 409 (Cuba).

Dendrœca maritima, *A. & E. Newt.* Ibis, i. 1859, 144 (St. Croix).

Spotted Yellow Flycatcher, *Edw.* Gl. 101, pl. 257.

Spotted Yellow Warbler, *Lath.* Syn. ii. pt. ii. 1783, 482, n. 106.

Spotted Warbler, *Penn.* AZ. ii. 1785, 407, n. 302.

Figuier brun de Canada, Ficedula canadensis fusca, *Briss.* Orn. iii. 1760, 515, n. 63, pl. 27, f. 4 (after Edwards, pl. 257).

Figuier tacheté de jaune, *Buff.* "Hist. Nat. Ois. v. 293".

Fauvette tigrée, *V.* N. D. d'H. N. xi. 1817, 228.—*V.* Ency. Méth. ii. 1823, 428.

Bec-fin à joues rousses, *D'Orb.* l. c.

Spotted Creeper, *Gosse,* l. c.

Fauvette du Cape May, *Le Moine,* Ois. Canad. 1861, 208.

Cape May Warbler, Cape May Wood Warbler, *Authors.*

NOTE.—All the synonymy flows in one stream from Edw. pl. 257, until it receives the tributary *maritima* Wils.—V. OAS. pl. 94, has been referred to "montana Wils.", but wrongly, I think, though at least one author, Nuttall, 1832, called the "Blue Mountain Warbler" "S. tigrina Lath." Note that Latham's var. A. of his "Spotted Yellow Warbler" is altogether another bird, namely, *Siurus nævius,* q. v.

HAB.—Eastern Province, United States and temperate British America. North to Hudson's Bay and Lake Winipeg. Only known west to the Mississippi. A rather rare migrant in most of the United States, breeding from Northern New England northward. Winters in various West India Islands. Resident in Jamaica. No Mexican nor Central American record.

Dendrœca discolor.—Prairie Warbler.

Sylvia discolor, *V.* OAS. ii. 1807, 37, pl. 98.—*V. N.* D. d'H. N. xi. 1817, 181.—*Steph.* Gen. Zool. x. 1817, 716.—*V.* Ency. Méth. ii. 1823, 445, n. 92.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 82.—*Less.* Tr. Orn. 1831, 418.—*Nutt.* Man. i. 1832, "294" (i. e. 394).—*Aud.* OB. i. 1831, 76, pl. 14.—*Brew.* Journ. Bost. Soc. i. 1837, 436 (Massachusetts).—*Peab.* Rep. Crn. Mass. 1839, 311.

Sylvicola discolor, *Jard.* "ed. Wils. 1832".—*Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.—*Bp.* CGL. 1838, 23.—*Aud.* Syn. 1839, 62.—*Aud.* BA. ii. 1841, 68, pl. 97.—*Gosse,* B. Jam. 1847, 159.—*Bp.* CA. i. 1850, 308.—*Hoy,* Pr. Phila. Acad. vi. 1853, 311 (Wisconsin).—*Read,* ibid. 399.—*Pratten,* Tr. Ill. Agric. Soc. i. 1855, 602.—*Brew.* Pr. Bost. Soc. 1856, 6 (Massachusetts).—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Bland,* Smiths. Rep. for 1858, 1859, 287 (Bermuda).—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Albrecht,* J. f. O. 1861, 53 (Bahamas).—*Bry.* Pr. Bost. Soc. x. 1866, 251 (Porto Rico).—*Bry.* J. f. O. 1866, 184 (the same).—*Bry.* Pr. Bost. Soc. xi. 1867, 91 (San Domingo).

Mniotilta discolor, *Gray,* G. of B. i. 1848, 196.

Rhimamphus discolor, *Gundl.* J. f. O. 1855, 474 (Cuba).

Dendroica discolor, *Bd.* BNA. 1858, 290.—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 408.—*March,* Pr. Phila. Acad. xv. 1863, 293 (Jamaica).—*Allen,* Pr. Ess. Inst. iv. 1864, 64 (Massachusetts).—*Bd.* Rev. AB. 1865, 213.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe,* Am. Nat. ii. 1868, 178.—*Turnb.* B. E. Pa. 1869, 25; Phila. ed. 18.—*Gundl.* J. f. O. 1872, 416 (Cuba).—*Packard,* Am. Nat. viii. 1874, 271.—*B. B. & R.* NAB. i. 1874, 276, pl. 14, f. 9.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.

Dendrœca discolor, *A. & E. Newt.* Ibis, i. 1859, 144 (St. Croix).—*Scl.* PZS. 1861, 71 (Jamaica).—*Albrecht,* J. f. O. 1862, 194 (Jamaica).—*Coues,* Pr. Ess. Inst. v. 1868, 274.—*Coues,* Pr. Bost. Soc. xii. 1868, 110 (South Carolina).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 615.—*Allen,* Am. Nat. iii. 1869, 507, 578.—*Allen,* Bull. MCZ. ii. 1871, 268 (Florida, resident).—*Coues,* Key, 1872, 103.—*Allen,* Bull. MCZ. iii. 1872, 125 (Kansas).—*Maynard,* B. Fla. 1873, 58.—*Merr.* Am. Nat. viii. 1874, 87.—*Coues,* BNW. 1874, 63.—*Gentry,* Life-Hist. i. 1876, 129.—*Bailey,* Bull. Nutt. Club, i. 1876, 25.—*Minot,* B. N. Engl. 1877, 105.—*Merr.* Trans. Conn. Acad. 1877, 17.

Sylvia minuta, *Wils.* AO. iii. 1811, 87, pl. 25, f. 4.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 86.—*Gosse,* Alabama, 1859, 295.

Phyllopneuste minuta, *Boie,* Isis, 1828, 321.

Sylvicola minuta, *Denny,* PZS. 1847, 38.

Fauvette discolor, *V.* l. c. 1817.

Particoloured Warbler, *Steph.* l. c.

Fauvette discolore, *V.* Ency. Méth. ii. 1823, 445.

Red-backed Warbler, *Gosse,* B. Jam. 1847, 159.

Prairie Warbler, *Authors.*

HAB.—Eastern United States. North to Southern New England; west to Kansas. Breeds throughout its United States range. Winters in Florida, and more numerously in most of the West India Islands. No extralimital continental record.

Dendrœca dominica.—Yellow-Throated Warbler.

a. dominica

Motacilla dominica, *Linn.* SN. i. 1766, 334, n. 26 (Briss. iii. 520, n. 65, pl. 27, f. 3; Sloane, Jam. ii. 310) (Jamaica and San Domingo).—*Gm.* SN. i. 1788, 980, n. 26.—*Turt.* SN. i. 1806, 603.

Sylvia dominica, *Lath.* IO. ii. 1790, 538, n. 114.—*V.* N. D. d'H. N. xi. 1817, 223 (made a var. of *maculosa*).—*Steph.* Gen. Zool. x. 1817, 612.

Mniotilta dominica, *Gray,* G. of B. i. 1848, 197.—*Gieb.* Nomenc. Av. ii. 1875, 602.

Dendroica dominica, *Bd.* Rev. AB. 1865, 209 (Colima, &c.).—*Sumich.* Mem. Bost. Soc. i. 1869, 547 (Orizaba).—*Ridgw.* Am. Nat. vii. 1873, 606.—*Gundl.* J. f. O. 1872, 415 (Cuba).—*B. B. & R.* NAB. i. 1874, 240, pl. 14, f. 6.

Dendroica dominica *var.* **dominica,** *Ridgw.* Am. Nat. vii. 1873, 607.—*B. B. & R.* NAB. i. 1874, 241, pl. 14, f. 6.

Dendrœca dominica, *Coues,* Pr. Ess. Inst. v. 1868, 270 (questions its occurrence in New England; refers to *Linsley,* Am. Journ. Sci. xliv. 1843, 258).—*Coues,* Pr. Bost. Soc. xii. 1868, 109 (South Carolina).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 611.—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200 (Yucatan).—*Allen,* Bull. MCZ. ii. 1871, 268 (Florida, in winter).—*Scott,* Pr. Bost. Soc. xv. 1872, 222 (West Virginia).—*Coues,* Key, 1872, 103.—*Coues,* Am. Nat. vii. 1873, 421.—*Allen,* Am. Nat. vii. 1873, 363.—*Maynard.* B. Fla. 1873, 60.—*Coues,* BNW. 1874, 66, 233.—*Merriam,* Am. Nat. viii. 1874, 7, 8.—*Brewst.* Bull. Nutt. Club, ii. 1877, 102 (best biography).—*McCauley,* Bull. U. S. Geol. Surv. iii. 1877, 661 (Texas).—*Merr.* Trans. Conn. Acad. iv. 1877, 17 (Connecticut, several instances).—*Brewst.* Bull. Nutt. Club, iii. 1878, 43.

Motacilla superciliosa, *Bodd.* Tabl. PE. 1783, 43 (pl. 686, f. 1).

Mniotilta superciliosa, *Gray,* G. of B. i. 1848, 196.

Dendroica superciliosa, *Bd.* BNA. 1858, 289.—*Wheaton,* Ohio Agric. Rep. for 1860, 1861, 374 (Ohio, quite common).—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 408 (Washington, casual.)—*March,* Pr. Phila. Acad. xv. 1863, 293 (Jamaica).—*Haym.* Cox's Surv. Indiana, 1869, 217 (Indiana, common).—*Scl.* PZS. 1869, 374 (Oaxaca).—*Turnb.* B. E. Pa. 1869, 53; Phila. ed. 42.—*Snow,* B. Kans. 1873, 5.

Dendrœca superciliosa, *Scl.* PZS. 1859, 363 (Xalapa).—*Scl.* PZS. 1862, 368 (Mexico).—*S. & S.* Ibis, ii, 1860, 274 (Dueñas) —*Dress.* Ibis, 2d ser. i. 1865, 478 (San Antonio, Tex.).

Motacilla pensilis, *Gm.* SN. i. 1788, 960, n. 76 (from Buffon and Latham).—*Turt.* SN. i. 1806, 590.—*Less.* Tr. Orn. 1831, 418.

Matacilla pensilis, *Ledru,* "Voyage, ii. 1810.—*Knox,* Hist. Acc. St. Thomas, 1852, p. —".

Sylvia pensilis, *Lath.* IO. ii. 1790, 520, n. 41.—*V.* OAS. ii. 1807, 11, pl. 72.—*V.* N. D. d'H. N. xi. 1817, 177.—*Steph.* Gen. Zool. x. 1817, 629.—*V.* Ency. Méth. ii. 1823, 427, n. 26.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 79.—*Nutt.* Man. i. 1832, 374.—*Aud.* OB. i. 1831, 434, pl. 85.—*D'Orb.* Ois. Cuba, 1839, 65.—*Haym.* Pr. Phila. Acad. viii. 1856, 200 (Indiana).

Sylvicola pensilis, *Bich.* Rep. Brit. Assoc. for 1836, 1837, 172.—*Bp.* CGL. 1838, 22.—*Aud.* Syn. 1839, 53.—*Aud.* B. Am. ii. 1841, 32, pl. 79.—*Gosse,* B. Jam. 1847, 156.—*Denny,* PZS. 1847, 38.—*Gosse,* Ill. B. Jam. 1849, pl. 32.—*Bp.* CA. i. 1850, 307.—*Lawr.* Ann. Lyc. N. Y. vi. 1853, 8 (Long Island).—*Read,* Pr. Phila. Acad. vi. 1853, 398 (Ohio).—*Sallé,* PZS. 1857, 231 (San Domingo).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Albrecht,* J. f. O. 1862, 201 (Jamaica).—*Bry.* Pr. Bost. Soc. xi. 1867, 91 (San Domingo).

Rhimanphus pensilis, *Cab.* MH. i. 1850, 19.

Rhimamphus pensilis, *Gundl.* J. f. O. 1855, 474 (Cuba).—*Scl.* PZS. 1856, 291 (Mexico).—*Gundl.* J. f. O. 1861, 408 (Cuba).

Sylvicola pensilis, *Pratten,* Tr. Ill. Agric. Soc. i. 1855, 601.

Dendroica pensilis, *Scl.* PZS. 1858, 295 (Cordova).

Motacilla flavicollis, *Gm.* SN. i. 1788, 959, n. 71 (from Catesby, Brisson, &c.).—*Turt.* SN. i. 1806, 589.

Sylvia flavicollis, *Lath.* IO. ii. 1790, 518, n. 35.—*V.* OAS. ii. 1807, 45.—*Wils.* AO. ii. 1810, 64, pl. 12, f. 6.—*V.* N. D. d'H. N. xi. 1817, 191.—*Steph.* Gen. Zool. x. 1817, 679.—*V.* Ency. Méth. ii. 1823, 453, n. 118.—*Bp.* Journ. Phila. Acad. iv. 1824, 188.

Sylvicola flavicollis, *Hoy,* Pr. Phila. Acad. vi. 1853, 310 (Wisconsin).

Figuier cendré de S. Domingue, Ficedula dominicensis cinerea, *Briss.* Orn. iii. 1760, 520, n. 65, pl. 27, f. 3 (basis of *M. dominica* L.).

Cou-jaune, *Buff.* "Hist. Nat. Ois. v. 165"; PE. 686, f. 1 (basis of *M. superciliosa* Bodd. and of *M. pensilis* Gm.).

Mésange grise de la Caroline, Parus carolinensis griseus, *Briss.* Orn. iii. 1760, 563, n. 10 (a basis of *M. flavicollis* Gm.).

Yellow-throated Creeper, Parus americanus gutture luteo, *Cates.* Car. i. 1771, 62, pl. 62 (a basis of *M. flavicollis* Gm.).

Yellow-throat Warbler, *Penn.* A. Z. ii. 1785, 400, n. 286.

Yellow-throated Warbler, *Lath.* Syn. ii. pt. ii. 1783, 437, n. 31.

Mésange grise à gorge jaune, *Buff.* "v. 454".

Pensile Warbler, *Lath.* Syn. ii. pt. ii. 1783, 441, n. 37 (= *Cou-jaune,* Buff. v. 165; PE. 686, f. 1. A basis of *M. pensilis* Gm.).

Parus griceus gutture luteo, *Bartr.* Trav. 1791, 292.

Jamaica Warbler *and* **St. Domingo Warbler,** *Turton,* ll. cc.

Jamaica Warbler, *Lath.* Syn. ii. pt. ii. 1783, 485, n. 110.

Fauvette grise à cou jaune, *V.* N. D. d'H. N. xi. 1817, 191.

Fauvette à cou jaune, *V.* Ency. Méth. ii. 1823, 427.

Fauvette grise à gorge jaune, *V.* OAS. ii. 1807, 45.—*V.* Ency. Méth. ii. 1823, 453.

Bec-fin à gorge jaune, *D'Orb.* l. c.

Yellow-throated Warbler, Yellow-throated Gray Warbler, Yellow-throated Wood-warbler, *Authors.*

b. albilora

Dendroica dominica *var.* **albilora,** *Ridgw.* Am. Nat. vii. 1873, 606.—*B. B. & R.* NAB. i. 1874, 241, pl. 14, f. 7.

NOTE.—There are three sources of the four old names of this species. The first binomial, *M. dominica* L., is from Brisson's "Figuier cendré de S. Domingue", after Sloane. The second, *M. superciliosa* Bodd., and the third, *M. pensilis* Gm., are both from the "Cou-jaune" of Buffon, PE. 686. f. 1—the "Pensile Warbler" of Latham. The fourth, *M. flavicollis* Gm., is Catesby's "Yellow-throated Creeper".

We have no recognized late names for the bird, excepting *albilora* of Ridgway, which may stand as a geographical race. Probably the record of the bird from the Mississippi Valley all belongs to *albilora;* but it is not easy to discriminate. Texas specimens I have lately examined have the superciliary stripe entirely white, and such seems to be the character of the birds from the western portions of the range of the species.

HAB.—Eastern United States, rather southerly. North regularly to Ohio, Illinois, Indiana, being common in the Ohio Valley (*Wheaton et al.*); rarely east of the Alleghanies, even in corresponding latitudes. Washington, D. C., rare (*Coues & Prentiss*); West Virginia (*W. D. Scott*); Pennsylvania (*Turnbull*); New Jersey (*Audubon*); New York (*DeKay*). Connecticut (*cf. Coues,*

Pr. Essex Inst. v. 270; *Coues*, BNW. 66; and especially *Merriam*, Tr. Conn. Acad. iv. 17). West to Kansas (*Snow*) and Texas (*McCauley.*) Breeds in its United States range at large. Winters in Florida, Mexico (Xalapa, Cordova, Colima), Central America, Guatemala, Yucatan, and various West India Islands (Cuba, San Domingo, Jamaica, where probably resident). Replaced in Porto Rico by *D. adelaidæ*, and in the Southern Middle Province of the United States by *D. graciæ*.

It should be added, that Mr. Ridgway restricts the range of true *dominica* to the Atlantic States as far north as Washington in summer, and in winter to Cuba, San Domingo, and Jamaica, assigning to his var. *albilora* the following *habitat*:—"In summer, the Mississippi region of the United States, north to Lake Erie; common in South Illinois. In winter, and possibly all the year, in Mexico, south to Guatemala, Yucatan on the Atlantic, and Colima on the Pacific side."

Dendrœca kirtlandi.—Kirtland's Warbler.

Sylvicola kirtlandii, *Bd.* Ann. Lyc. N. Y. v. 1852, 216, pl. 6 (Cleveland, Ohio, May, 1851, J. P. Kirtland).—*Zuchold*, J. f. O. 1854, 355 (copies descr.).—*Cass.* Ill. i. 1855 278, pl. 47 (from the original).

Dendroica kirtlandii, *Bd.* BNA. 1858, 286.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 374 (ref. to the orig. spec. and to another from same locality, and to a possible third from Racine, Wis.).—*Bd.* Rev. AB. 1865, 206 (notices a second specimen from sea near Bahamas, in Coll. S. Cabot, and report of third and fourth specimens in "Ohio Farmer" for June 9, 1860).

Dendrœca kirtlandi, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 617.—*Langdon*, Cat. B. Cincinnati, 1877, 6.

Dendrœca kirtlandii, *Coues*, Key, 1872, 104.

Dendroica kirtlandi, *B. B. & R.* NAB. i. 1874, 272, pl. 14, f. 5.

Mniotilta kirtlandi, *Gieb.* Nomenc. Av. ii. 1875, 603.

Kirtland's Warbler, *Authors.*

HAB.—Of the known specimens, four in number, three were taken in Ohio and one at sea between the Bahamas and Cuba. Supposed to have been seen in Wisconsin (Racine, *Hoy*).

Dendrœca palmarum.—Yellow Red-poll Warbler.

a. palmarum

Motacilla palmarum, *Gm.* SN. i. 1788, 951, n. 53 (San Domingo; based on the *Bimbelé ou fausse Linotte*, Buff. v. 330, and *Palm Warbler* of Lath. Syn. ii. pt. ii. 498, n. 131).—*Less.* Tr. Orn. 1831, 418.

Sylvia palmarum, *Lath.* IO. ii. 1790, 544, n. 136.—*V.* OAS. ii. 1807, 21, pl. 73.—*V.* N. D. d'H. N. xi. 1817, 168.—*Steph.* Gen. Zool. x. 1817, 607.—*V.* Ency. Méth. ii. 1823, 431, n. 42.—*Bp.* AO. ii. —, —, pl. 10, f. 2.—*Bp.* Journ. Phila. Acad. v. 1825, 29 (Florida).—*Bp.* Ann. Lyc. N. Y. ii. 1826, 78.—*D'Orb.* Ois. Cuba, 1839, 61, pl. 8.

Sylvicola palmarum, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172 (= *Bp.* AO. pl. 10, f. 2).—*Sallé*, PZS. 1857, 231 (San Domingo).—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Albrecht*, J. f. O. 1861, 53 (Bahamas).—*Bry.* Pr. Bost. Soc. xi. 1867, 91 (San Domingo).

Mniotilta palmarum, *Gray*, G. of B. i. 1848, 196 (= Gm., and Bp. AO. pl. 10, f. 2).

Dendroica palmarum, *Bd.* BNA. 1858, 288.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Coues & Prent*, Smiths. Rep. for 1861, 1862, 408.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Verr.* Pr. Ess. Inst. iii. 1862, 147.—*Allen*, Pr. Ess. Inst. iv. 1864, 63.—*Bd.* Rev. AB. 1865, 207.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe*, Am. Nat. ii. 1868, 171.—*Turnb.* B. E. Pa. 1869, 25; Phila. ed. 18.—*Gundl.* J. f. O. 1872, 415 (Cuba).—*B. B. & R.* NAB. i. 1874, 273, pl. 14, f. 8.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.

Dendrœca palmarum, *Scl.* PZS. 1861, 71 (Jamaica).—*Albrecht,* J. f. O. 1862, 193 (Jamaica). *Blak.* Ibis, v. 1863, 63.—*McIlwr.* Pr. Ess. Inst. v. 1866, 86.—*Coues,* Pr. Bost. Soc. xii. 1868, 109 (South Carolina, in winter).—*Coues,* Pr. Ess. Inst. v. 1868, 274.—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 616.—*Coues,* Pr. Phila. Acad. xxiii. 1871, 21.—*Coues,* Key, 1872, 104.—*Allen,* Bull. MCZ. ii. 1871, 208 (Florida, wintering).—*Mayn.* Guide, 1870, 104.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 368.—*Mayn.* B. Fla. 1873, 52.—*Coues,* BNW. 1874, 67.—*Gentry,* Life-Hist. i. 1876, 132.—*Minot,* B. N. Engl. 1877, 122.—*Merr.* Tr. Conn. Acad. iv. 1877, 18.

Sylvia petechia, *Wils.* AO. vi. 1812, 19, pl. 28, f. 4.—*Bp.* Journ. Phila. Acad. iv. 1824, 198.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 83.—*Nutt.* Man. i. 1832, 364.—*Aud.* OB. ii. 1834, 259, 360, pls. 163, 164.—*Peab.* Rep. Orn. Mass. 1839, 307.—*McCulloch,* Journ. Bost. Soc. iv. 1844, 406 (habits; makes it a *Seiurus*).—*Thomps.* NH. Vermont, 1853, 80.

Sylvicola petechia, *S. & R.* FBA. ii. 1831, 215, pl. 41.—*Aud.* Syn. 1839, 58.—*Aud.* BA. ii. 1841, 55, pl. 90.—*Hoy,* Pr. Phila. Acad. 1853, 310.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Willis,* Smiths. Rep. for 1858, 1859, 282.—*Hoy,* Smiths. Rep. for 1864, 1865, 437 (Missouri).—*Trippe,* Pr. Ess. Inst. vi. 1871, 114.

Phyllopneuste petechia, *Boie,* Isis, 1828, 321.

Mniotilta petechia, *Gray,* G. of B. i. 1848, 196 (= *Wils.* pl. 28, f. 4).

Sylvicola petechea, *Pratten,* Tr. Ill. Agric. Soc. i. 1855, 602.

Sylvicola ruficapilla, *Bp.* CGL. 1838, 22.—*Bp.* CA. i. 1850, 307. (Not *Mot. ruficapilla* Gm.)

Rhimamphus ruficapillus, *Gundl.* J. f. O. 1855, 473 (Cuba); 1861, 408 (same).

Bimbelé ou Fausse Linote, *Buff.* "v. 330".

Palm Warbler, *Lath.* Syn. ii. pt. ii. 1783, 498, n. 133 (cites *Bimbelé* of Buffon).

Fauvette bimbelé, *V.* N. D. d'H. N. xi. 1817, 168.—*V.* EM. ii. 1823, 421.

Bec-fin bimblé, *D'Orb.* l. c.

Fauvette à tête rouge, *Le Moine,* Ois. Canad. 1861, 195.

Yellow Red-poll Warbler (not of Edw.), **Palm Warbler,** *Authors.*

b. hypochrysea

Dendrœca palmarum hypochrysea, *Ridgw.* Bull. Nutt. Club, i. 1876, 84.

NOTE (1).—The "Yellow Red-poll" of Edwards, pl. 256, f. 2, basis of *M. petechia* L., and wrongly ascribed to Pennsylvania by the early authors, is the West Indian conspecies of *D. æstiva,* as any one may be satisfied by a glance at the figure. Being ascribed to Pennsylvania, it was not unnaturally mistaken for the present species by some who never saw Edwards's plate, and never read Brisson's elaborate description; for the terms of the Linnæan diagnosis make it equally applicable to the present species. Wilson transferred the name *petechia,* with Edwards's English name, to this species, and many have followed him, the "Yellow Red-poll" of late and current vernacular being thus applied to the present species.—The first tenable name is *palmarum* Gm., based on the Bimbelé of Buffon, which became the "Palm Warbler" of Latham.—Bonaparte called the bird *ruficapilla* in 1838 and 1850; but the original *ruficapilla* Gm., Lath., after *Ficedula martinicana* Brisson, was another West Indian *æstiva*-like bird, which Latham and Pennant called the Bloody-sided Warbler.—My index-slips include many West Indian citations of "petechia", but I am afraid to use them, as I cannot tell now whether they refer to true *petechia* or to *palmarum,* which latter occurs in the West Indies.

NOTE (2).—A recent paper by Mr. Ridgway, "On Geographical Variation in *Dendrœca palmarum*", < Bull. Nutt. Club, i. 1876, pp. 81–87, separates the species into two subspecies, *D. palmarum* subs. *palmarum* and *D. palmarum* subs. *hypochrysea.* The range of the former is given as follows:—"Mississippi Valley during the migrations; breeding in the interior of British America, wintering in the Gulf States, from Texas to Western and Southern Florida, and West Indies (Cuba, Jamaica, Santo Domingo, and Bahamas). Casual in certain Atlantic States (but not in New England?)." The new variety is assigned as follows:—"Atlantic States, from East Florida (in winter) to Nova Scotia. Breeding in Maine and northward and wintering in the South Atlantic States; apparently not found at all in the West Indies, nor in Southern and Western Florida!" It being scarcely or not practicable to rearrange the synonymy of the species in conformity with the subspecific distinction here drawn, I have left all the prior names and references under the original, and have formed no opinion respecting the merits of the case as presented by Mr. Ridgway.

HAB.—Eastern Province of the United States and temperate British America. West only to the Lower Missouri and Texas. North to Labrador, Hud-

son's Bay, Forts Simpson and Resolution, &c., breeding only beyond the United States, as far as known, excepting Maine. Migrates early in the spring and late in the fall, being observed in New England at both seasons with the snow, April and November, and winters abundantly in the Southern States, from the Carolinas to Texas, as well as in various West India Islands, as Bahamas, Cuba, Jamaica, and San Domingo. No extralimital continental records.

Dendrœca pinûs.—Pine-creeping Warbler.

Sylvia pinus, *Wils.* AO. iii. 1811, 25, pl. 19, f. 4 (refers to Catesby. Not of any earlier writer, which = *Helminthophaga pinûs*).—*Steph.* Gen. Zool. x. 1817, 737 (in part. Synonymy mixed with that of *Helminthophaga pinus* and *Parula americana!*)—*V.* Ency. Méth. ii. 1823, 464, n. 163 (cites Wilson).—*Bp.* Journ. Phila. Acad. iv. 1824, 194.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 81.—*Nutt.* Man. i. 1832, 387.—*Aud.* OB. ii. 1834, 232, pl. 111.—*Peab.* Rep. Orn. Mass. 1839, 310.—*Thomps.* N. H. Vermont, 1853, 82.

Thriothurus? pinus, *Steph.* Shaw's Gen. Zool. xiv. 1826, 194 (in part).

Sylvicola pinus, *Jard.* "ed. Wils. 1832".—*Rich.* Rep. Brit. Assoc. for 1836, 1837, 172.—*Bp.* CGL. 1838, 22.—*Aud.* Syn. 1839, 54.—*Aud.* BA. ii. 1841, 37, pl. 82.—*Woodh.* Sitgr. Expl. Colo. R. 1853, 70 (Texas).—*Hoy,* Pr. Phila. Acad. vi. 1853, 311 (Wisconsin).—*Kennic.* Tr. Ill. Agric. Soc. 1855, 583 (Illinois).—*Pratten,* ibid. 602.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Jones,* "Nat. in Bermuda, 1859, 59" (Bermuda).—*Martens,* J. f. O. 1859, 312 (the same).—*Bland,* Smiths. Rep. for 1858, 1859, 287 (the same).—*Trippe,* Pr. Ess. Inst. vi. 1871, 114 (Minnesota?).

Mniotilta pinus, *Gray,* G. of B. i. 1848, 196 (not of *Gieb.* Nomenc. Av. ii. 1875, 605).

Rhimamphus pinus, *Bp.* CA. i. 1850, 311.

Dendroica pinus, *Bd.* BNA. 1858, 277 (not of *Coues,* Pr. Phila. Acad. 1861, 220 ("Labrador"), = *D. striata*).—*Coues & Prent.* Rep. Smiths. Inst. for 1861, 1862, 407 (Washington, D. C.; breeding, not wintering).—*Barnard,* Rep. Smiths. Inst. for 1860, 1861, 436.—*Verr.* Pr. Ess. Inst. iii. 1862, 156 (Maine).—*Allen,* Pr. Ess. Inst. iv. 1864, 62.—*Bd.* Rev. AB. 1865, 190.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Bryant* " Pr. Bost. Soc. 1867, 67 (Veragua)".—*Trippe,* Am. Nat. ii. 1868, 170.—*Turnb.* B. E. Pa. 1869, 25; Phila. ed. 18.—*Gregg,* Pr. Elmira Acad. 1870, p. —.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 368 (Illinois).—*B. B. & R.* NAB. i. 1874, 268, pl. 13, f. 6.—*Brew.* Pr. Bost. Soc. 1875, 440.—*Brewst.* Ann. Lyc. N. Y. xi. 1875, 136 (Virginia, breeding).

Dendrœca pinus, *McIlwr.* Pr. Ess. Inst. v. 1866, 86 (Canada West).—*Coues,* Pr. Bost. Soc. xii. 1868, 109 (South Carolina resident).—*Cope,* Am. Nat. iv. 1870, 396.—*Allen,* Bull. MCZ. ii. 1871, 268 (Florida, resident).—*Coues,* Key, 1872, 104.—*Scott,* Pr. Bost. Soc. xv. 1872, 222.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 366 (Maine and New Hampshire).—*Merr.* Am. Nat. viii. 1874, 7, 8, 87.—*Coues,* BNW. 1874, 69.—*Gentry,* Life-Hist. 1876, 135.—*Minot,* B. N. Engl. 1877, 120.—*Merr.* Tr. Conn. Acad. iv. 1877, 18.

Dendrœca pina, *Coues,* Pr. Ess. Inst. v. 1868, 272.—*Mayn.* B. Fla. 1873, 48.

Sylvia vigorsii, *Aud.* OB. i. 1832, 153, pl. 30.

Vireo vigorsii, *Nutt.* Man. i. 1832, 318.

Pine-Creeper, Parus americanus lutescens, *Cates.* Car. i. 1771, 61, pl. 61 (not the *Pine Creeper* of Edwards).

Mésange d'Amérique, Parus americanus, *Briss.* Orn. iii. 1760, 576, n. 15 (cites Catesby).

Fauvette des Sapins, *V.* Ency. Méth. ii. 1823, 464.

Fauvette des Pins, *Le Moine,* Ois. Canad. 1861, 192.

Vigor's Vireo, *Nutt.* l. c.

Pine-creeping Warbler *of Authors.*

HAB.—Eastern Province, United States, Canada, and New Brunswick, but not known to reach Labrador, as wrongly recorded by me in Pr. Phila. Acad. 1861, 220. ("North to Massachusetts", *B. B. & R.* Hist. NAB. i. 268; but "to New Brunswick", *Iid. ibid.* 270.) West only to the Lower Missouri and Kansas, &c., thus strictly confined to the Eastern Province, like *palmarum* and some others. Breeds throughout its United States range, and winters in the Southern States, having no extralimital record whatever, excepting Bermudas (*Jones*) and Bahamas (*Bryant*).

Summer Yellowbird

Dendrœca æstiva

Motacilla canadensis, *Bodd.* Tabl. P. E. 1783, 4 (PE. 58, f. 2). (=*M. æstiva* Gm. Not *M. canadensis* Linn. sp. 27, nor sp. 42; nor *M. canadensis* Bodd. p. 24.)

Motacilla æstiva, *Gm.* SN. i. 1788, 996, n. 169.—*Turt.* SN. i. 1806, 615.—*Less.* Tr. Orn. 1831, 418.

Sylvia æstiva, *Lath.* IO. ii. 1790, 551, n. 157.—*V.* OAS. i. 1807, 35, pl. 95.—*V.* N. D. d'H. N. xi. 1817, 225.—*Steph.* Gen. Zool. x. 1817, 750.—*V.* Ency. Méth. ii. 1823, 429, n. 34.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 83.—*Fox,* Newc. Mus. 1827, 161.—*Aud.* OB. i. 1831, 476, pl. 95.—*Nutt.* Man. i. 1832, 370, fig.—*Peab.* Rep. Orn. Mass. 1839, 307.—*Thomps.* Vermont, 1853, 81, fig.—*Haym.* Pr. Phila. Acad. viii. 1856, 290.

Sylvicola æstiva, *S. & R.* FBA. ii. 1831, 211.—*Bp.* CGL. 1838, 23.—*Aud.* Syn. 1839, 58.—*Nutt.* Man. i. 2d ed. 1840, 417, fig.—*Aud.* BA. ii. 1841, 50, pl. 88.—*Gir.* BLI. 1844, 58.—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Woodh.* Sitgr. Rep. Zuñi, 1853, 70.—*Hoy,* Pr. Phila. Acad. vi. 1853, 310.—*Read,* ibid. 398.—*Henry,* Pr. Phila. Acad. vii. 1855, 309.—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Pratten,* ibid. 602.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Bry.* Pr. Bost. Soc. vi. 1857, 116.—*Maxim.* J. f. O. vi. 1858, 114.—*Willis,* Smiths. Rep. for 1858, 1859, 282.—*? Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Hoy,* Smiths. Rep. for 1864, 1865, 438.—*Finsch,* PZS. 1870, 564 (Trinidad).—*Trippe,* Pr. Ess. Inst. vi. 1871, 114.

Mniotilta æstiva, *Gray,* G. of B. i. 1848, 196.—*Cabot,* Naum. ii. Heft iii. 1852, 66.—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.

Rhimanphus æstivus, *Cab.* MH. i. 1850, 19.

Rhimamphus æstivus, *Bp.* CA. i. 1850, 311.—*? Gundl.* J. f. O. 1855, 472 (Cuba).—*Scl.* PZS. 1855, 143 (Bogotá).—*Scl.* PZS. 1856, 141 (Chiriquí).—*Scl.* PZS. 1857, 202 (Xalapa).—*? Cab.* J. f. O. 1860, 326 (Cuba).

Dendroica æstiva, *Bd.* BNA. 1858, 282.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. Birds, 10.—*Heerm.* PRRR. x. 1859, 40.—*Henry,* Pr. Phila. Acad. xi. 1859, 106.—*Xant.* ibid. 191.—*Brew.* Pr. Bost. Soc. vii. 1859, 21 (nests).—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*C. & S.* NHWT. 1860, 181.—*Cass.* Pr. Phila. Acad. xii. 1860, 191, 192 (Isthmus of Darien).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 408.—*Blak.* Ibis, iv. 1862, 4.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Verr.* ibid. 137.—*Verr.* Pr. Ess. Inst. iii. 1862, 147.—*Allen,* Pr. Ess. Inst. iv. 1864, 63.—*Baird,* Rev. AB. 1865, 195.—*Lawr.* Ann. Lyc. N. Y. viii. 1865, 174 (Chiriqui); 179 (Nicaragua).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe,* Am. Nat. ii. 1868, 172.—*Butch.* Pr. Phila. Acad. xx. 1868, 149.—*Coop.* Ann. Nat. iii. 1869, 296.—*Turnb.* B. E. Pa. 1869, 25; Phila. ed. 18.—*v. Frantz.* J. f. O. 1869, 293 (Costa Rica).—*Dall & Bann.* Tr. Chicago Acad. i. 1869, —.—*Dall,* Ann. Nat. iv. 1870, 600.—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 463.—*Holden,* Pr. Bost. Soc. xv. 1872, 197.—*Ridg.* Bull. Ess. Inst. v. 1873, 180.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 675, 705, 713.—*Packard,* Am. Nat. viii. 1874, 271.—*B. B. & R.* NAB. i. 1874, 222, pl. 14, f. 1.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 10.—*Yarr.* ibid. 34.—*Hensh.* ibid. 41, 58, 74, 102.—*Hensh.* List B. Ariz. 1875, 156.—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 192.

Dendrœca æstiva, *Scl.* PZS. 1859, 363 (Xalapa).—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 322 (New Granada).—*Blak.* Ibis, v. 1863, 63.—*Scl* PZS. 1864, 172.—*S. & S.* PZS. 1864, 347 (Panama).—*Taylor,* ibid. vi. 1864, 81 (Trinidad).—*Coues,* Ibis, i. 2d ser. 1865, 159.—*Dress.* ibid. 478.—*Coues,* Pr. Phila. Acad. xviii. 1866, 69.—*McIlwr.* Pr. Ess. Inst. v. 1866, 86.—*Salv.* PZS. 1867, 136 (Veragua).—*Coues,* Pr. Bost. Soc. xii. 1868, 109.—*Coues,* Pr. Phila. Acad. 1868, 83.—*Brown,* Ibis, 2d ser. iv. 1868, 420 (Vancouver).—*Coues,* Pr. Ess. Inst. v. 1868, 273.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200 (Yucatan).—*S. & S.* PZS. 1869, 251 (Venezuela).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 606.—*S. & S.* PZS. 1870, 836 (Honduras).—*Salv.* PZS. 1870, 183 (Veragua).—*Wyatt,* Ibis, 3d ser. i. 1871, 322 (Ocaña).—*Coues,* Key, 1872, 97.—*Allen,* Am. Nat. vi. 1872, 265, 345, 396.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 366.—*Scott,* Pr. Bost. Soc. xv. 1872, 222.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235.—*Allen,* Pr. Bost. Soc. xvii. 1874, 52.—*Coues,* BNW. 1874, 54, 232.—*Coop.* Am. Nat. viii. 1874, 16.—*Nelson,* Pr. Bost. Soc. xvii. 1875, 339, 346, 357.—*Gentry,* Life-Hist. 1876, 99.—*Minot,* B. N. Engl. 1877, 103.—*Merr.* Tr. Conn. Acad. iv. 1877, 15.

Sylvia æstiva, *Towns.* Journ. Phila. Acad. viii. 1839, 153.
Figuier tacheté, *Buff.* "Hist. Nat. Ois. v. 235" (a basis of *M. æstiva* Gm.). (Adult.)
Figuier de Canada, *Buff.* PE. 58, f. 2 (same as *Figuier tacheté* of Buff.). (Adult.)
Ficedula canadensis, *Briss.* Orn. iii. 1760, 492, n. 51, pl. 26, f. 3 (first basis of *M. æstiva* Gm.).
Sylvia carolinensis, *Lath.* IO. ii. 1790, 551, n. 158 (based on PE. 58, f. 1).—*Steph.* Gen. Zool. x. 1817, 752.
Motacilla carolinensis, *Turt.* SN. i. 1806, 615 (same as Latham's bird).
Mniotilta carolinensis, *Gray,* G. of B. i. 1848, 196.
Figuier de la Caroline, *Buff.* PE. 58, f. 1 (basis of *S. carolinensis* Lath.).
Figuier de la Caroline, Ficedula carolinensis, *Briss.* iii. 1760, 486, n. 48 (Carolina; quotes Cates. 63; but also gives West Indian localities).
Olive Warbler, *Penn.* AZ. ii. 1785, 409, n. 307 (based on PE. 58, f. 1).—*Steph.* Gen. Zool. x. 1817, 752.
Yellow-poll Warbler, *Penn.* AZ. ii. 1785, 402, n. 292.—*Lath.* Syn. ii. pt. ii. 1783, 515, n. 148 (based on PE. 58, figs. 1 and 2).
Yellow Titmouse, Parus carolinensis luteus, *Cates.* Car. i. 1771, 63, pl. 63.
Parus luteus, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 292.
Sylvia flava, *Vieill.* OAS. ii. 1807, 31, pl. 89.—*V.* N. D. d'H. N. 2d ed. xi. 1817, 195.—*V.* Ency. Méth. ii. 1823, 455, n. 125.—*Less.* Tr. Orn. 1831, 418 (=*V.* OAS. pl. 89).
Sylvia citrinella, *Wils.* AO. ii. 1810, 111, pl. 15, f. 5.—*Bp.* Journ. Phila. Acad. iv. 1824, 190.—*Wagl.* Isis, 1831, 529.—*Bruhin,* Zool. Gart. 1871, 18.
Motacilla rubiginosa, *Pall.* Zoog. R.-A. i. 1811 (1831), 496 (Kodiak).
Rhimamphus citrinus, "*? Raf.* Journ. de Phys. lxxxviii. 1819, 417".
Sylvia childrenii, *Aud.* OB. i. 1831, 180, pl. 35.
Sylvia childreni, *Nutt.* Man. i. 1832, 370.
Sylvicola childrenii, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.
Sylvia rathbonia, *Aud.* OB. i. 1831, 333, pl. 65.
Sylvicola rathbonia, *Rich.* Rep. 1837, 172.—*Bp.* CGL. 1838, 23.—*Nutt.* Man. i. 2d ed. 1840, 447.
Sylvicola rathbonii, *Aud.* Syn. 1839, 58.—*Aud.* BA. ii. 1841, 53, pl. 89.
Mniotilta rathbonia, *Gray,* G. of B. i. 1848, 196.
Rhimamphus rathbonia, *Bp.* CA. i. 1850, 311.
Rhimamphus chryseolus, *Bp.* "Bull. Soc. Linn. Caen. ii. 1831, 32 (Cayenne)".
Sylvia trochilus, *Nutt.* Man. i. 1832, 406.—*Peab.* Rep. Orn. Mass. 1839, 312.
Citron Open-bill, *? Raf.* "Am. Month. Mag. iv. 1818, 39".
Citron Warbler, *Sw. & Rich,* FBA. ii. 1831, 211.
Children's Warbler, Rathbone's Warbler, *Aud.* ll. cc.
Yellow Wren, *or* **Willow Wren,** *Nuttall,* l. c.—*Peab.* l. c.
Fauvette tachetée de rougeâtre, *V.* l. c. 1817 and 1823.
Fauvette jaune, *V.* Ency. Méth. ii. 1823, 455.—*Le Moine,* Ois. Canad. 1861, 198.
Summer Warbler, Summer Yellowbird, Golden Warbler, Yellow Warbler, Yellow-poll Warbler, Blue-eyed Yellow Warbler, *Authors.*

[*Note.*—In the foregoing synonymy, the different modes of writing *æstiva* or *aestiva* are not preserved.—All the above quotations are believed to be strictly applicable to the ordinary North American bird, exclusive of its several West Indian conspecies or varieties.—The *Motacilla petechia* Linn. SN. i. 334, n. 30, is based on *Ficedula pensilvanica erythrocephalos* Briss. iii. 488, and Yellow Red-pole Edw. pl. 256, f. 2, and quoted from "Pennsylvania"; the references, however, and the descriptions of the authors cited, indicate clearly that it is one of the West Indian red-capped conspecies of *D. æstiva*—neither *D. æstiva* itself, nor *D. palmarum*, though the name has been used in connection with both these species.—The names *ruficapilla*, *albicollis*, and *chloroleuca* of Gmelin, all indicate birds like *D. æstiva*, but are apparently rather referable to some of the West Indian forms. "Bloody-sided" Warbler is one of the epithets of *Dendrœca pennsylvanica* or *icterocephala*, the Chestnut-sided Warbler of authors; but the Bloody-sided Warbler of Pennant and Latham, based on *Ficedula martinicana* of Briss. iii. 490, pl. 22, f. 4 (= *Mot. ruficapilla* of Gmelin), is one of the West Indian Warblers like *D. æstiva*.—The *Sylvia flava* of Vieillot seems to be unquestionably *D. æstiva*.—In addition to the synonyms given, the curious reader, if he be so minded, may look among the older names for a *Motacilla* or *Sylvia trochilus* var. *β*, a supposed variety of the Willow Wren or Yellow Wren of Europe, for a long time quoted

also from America, and supposed to inhabit this country. Examine, for instance, *Motacilla trochilus* β, *acredula*, L. SN. i. 338, n. 49 β; *Sylvia trochilus*, β. Lath. IO. ii. 550, n. 155 β; *Sylvia acredula*, Steph. Gen. Zool. x. 744; in all of which places Catesby's pl. 63 and Edwards's pl. 278, f. 2, are cited, and the bird is ascribed to North America. Vieillot discusses this matter in connection with a bird described by him as the "Fauvette naine", *Sylvia* **pumilia**, OAS. ii. pl. 100, or the "Pouillot nain", *S. pumilia*, N. D. d'H. N. xi. 239, where it is referred to *trochilus* var. of Lath., and Ency. Méth. ii. 467, where the female is said to be figured by Edwards, pl. 278, f. 2, and where reference is made to the "Figuier brun et jaune" of Buffon, v. 295; but I cannot make out what his *pumilia* is, nor has any one identified it, so far as I know. The whole matter hinges on Edw. pl. 278, f. 2; and as this is not recognizable, the case is dubious, probably beyond determination. It is unnecessary to add that no such bird occurs in this country; but so much of the composition of the species as includes American references is doubtless more or less exclusively pertinent to *Dendrœca æstiva*. The ascribing of the Willow Wren to this country lasted until within thirty or forty years, such species being given for instance in Nuttall's work of 1832 and Peabody's of 1839.—Boddaert has a *Motacilla canadensis*, which is this species, being based upon PE. 58, f. 2; but the name is twice anticipated by *Motacilla canadensis* of Linnæus, for two different species of the same genus.]

CH. SP.— ♂ *Flava, dorso flavo-virente, gastræo aurantio-brunneo striato; remigibus rectricibusque fuscis, extus et intus flavo-limbatis; rostro plumbeo;* ♀ *et juv. infrà innotata.*

♂, adult: Golden-yellow; the back with a greenish tinge resulting in rich yellow-olive, the rump more yellowish; the middle of the back sometimes obsoletely streaked with darker. Crown like the under parts, in high plumage often tinged with orange-brown. Breast and sides, and sometimes most of the under parts, streaked with orange-brown. Quills and tail-feathers dusky, edged on both webs with yellow, the yellow occupying most of the inner webs of the tail-feathers. Bill plumbeous. Feet pale brown. Length, 4½–5; extent, 7½–7¾; wing, 2½; tail, 2.

♀, adult: Like the ♂; yellow-olive of upper parts extending on the crown; streaks below obsolete or entirely wanting. General coloration paler than in the ♂.

Young: Like the ♀, but still more dully colored. Upper parts, including crown, pale olive, with an ochrey instead of clear yellow shade; below ochrey-white or dull pale yellowish. Edgings of wings and tail dull yellowish.

I have not seen, perhaps, the very youngest stage of this species; at any rate, I have seen no streaked specimens. The fledglings of comparatively few of our Warblers, even the commonest, have been described. But as far as known, all, with probably the exception of the present species, are streaked or spotted at first like very young Thrushes.

The North American Golden Warbler is well distinguished from its several West Indian and South American allies. It appears to be somewhat the smallest, with shortest tarsus—scarcely two-thirds of an inch. In the ♂ of *D. vieilloti*, the head all around is orange-brown; and, in *D. capitalis*, of the Barbadoes, the whole crown is of this color, sharply defined. *D. petechia*, of various West Indian Islands, is most nearly related; it is larger; the tarsi are longer; the wing is more rounded; the yellow-olive of the back extends with little more mixture of yellow on the nape, rump, and wing marginings: the yellow edgings of the tail are narrower. In any plumage, *D. æstiva* is distinguished from all the other North American species by the yellow edging instead of white blotching of the tail-feathers.

The synonymy of these and the several other extralimital species related to *D. æstiva* is subjoined.*

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* **Dendrœca petechia** (*L.*). [Jamaica.]

Motacilla petechia, *L.* SN. i. 1766, 334, n. 30. (Based on Edw. pl. 256, f. 2, and Briss. iii. 504; erroneously ascribed to Pennsylvania. Edwards's fig. shows clearly that the bird meant is *not Dendrœca palmarum*, but one of the "Golden Warblers" allied to *D. æstiva.*)—*Gm.* SN. i. 1788, 983, n. 30 (same).—*Turt.* SN. i. 1806, 605.—*Less.* Tr. Orn. 1831, 418.

Sylvia petechia, *Lath.* IO. ii. 1790, 535, n. 103.—*V.* OAS. ii. 1807, 32, pl. 91.—*Steph.* Gen. Zool. x. 1817, 733.—*Vieill.* N. D. d'H. N. xi. 1817, 228.—*Vieill.* Ency. Méth. ii. 1823, 443.

Dendrœca petechia, *Scl.* PZS. 1861, 71 (Jamaica).—*Scl.* Cat. AB. 1862, 32.

Dendroica petechia, *March,* Pr. Phila. Acad. 1863, 292 (Jamaica).—*Bd.* Rev. AB. 1865, 199 (Jamaica).—*B. B. & R.* NAB. i. 1874, 216.

Dendrœca petechia c) jamaicensis, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 607.

Sylvicola æstiva, *Gosse,* B. Jam. 1847, 157.

Yellow Red-poll, *Edw.* Gl. 99, pl. 256, f. 2 (basis of *M. petechia* L.).

Figuier à teste rouge de Pensilvanie, Ficedula pensilvanica erythrocephalos, *Briss.* Orn. iii. 1760, 488, n. 49 (after Edwards, pl. 256, f. 2).

Figuier à tête rouge de Pensylvanie, *Buff.* "v. 286".

Fauvette à tête rouge de Pensylvanie, *V.* OAS. l. c.

Red-headed Warbler, *Lath.* Syn. ii. pt. ii. 1783, 479, n. 99.—*Steph.* Gen. Zool. x. 1817, 733 (mixed with *D. palmarum*).

Red-head Warbler, *Penn.* AZ. ii. 1785, 401, n. 289.

Dendrœca petechia gundlachi (*Bd.*). [Cuba and Bahamas.]

? Motacilla albicollis, *Gm.* SN. i. 1788, 983, n. 147. (Based on Briss. iii. 494, n. 52, pl. 26, f. 5.)—*Turt.* SN. i. 1806, 605.

? Sylvia albicollis, *Lath.* IO. ii. 1790, 535, n. 104 (= Gm. 983).

? Sylvia albicollis, *V.* N. D. d'H. N. xi. 1817, 221.

Dendroica albicollis, *Cass.* Pr. Phila. Acad. 1860, 192 (Cuba).—*Lawr.* Ann. Lyc. N. Y. 1860, 18 (Cuba).—*Albrecht,* J. f. O. 1861, 205 (Cuba).—*Gundl.* J. f. O. 1861, 326 (Cuba).

Sylvia æstiva, *Lembeye,* "Av. Cuba, 1850, 31, not the figure".

Rhimamphus æstivus, *Gundl.* J. f. O. 1861, 407 (Cuba).

Dendroica gundlachi, *Bd.* Rev. AB. 1865, 197 (Cuba).

Dendroica petechia *var.* **gundlachi,** *B. B. & R.* NAB. i. 1874, 216.

Dendrœca petechia d) cubana, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 608.

? Figuier de S. Domingue, Ficedula dominicensis, *Briss.* Orn. iii. 1760, 494, n. 52, pl. 26, f. 5. (Basis of *M. albicollis* Gm.)

? Figuier à gorge blanche, *Buff.* "v. 287" (= Briss. iii. 494).

? St. Domingo Warbler, *Lath.* Syn. ii. pt. ii. 1783, 479, n. 100 (= Briss. iii. 494).

? Motacilla chloroleuca, *Gm.* SN. i. 1788, 984, n. 149. (Based on Briss. iii. 496, n. 53, pl. 26, f. 2.)—*Turt.* SN. i. 1806, 606.

? Sylvia chloroleuca, *Lath.* IO. ii. 1790, 536, n. 106 (Gm. 984).—*Steph.* Gen. Zool. x. 1817, 734.

? Sylvia chroroleuca, *V.* N. D. d'H. N. xi. 1817, 195.

? Petit Figuier de S. Domingue, Ficedula dominicensis minor, *Briss.* Orn. iii. 1760, 496, n. 53, pl. 26, f. 2.

? Figuier vert et blanc, *Buff.* "v. 289" (= Briss. iii. 496).

? Green and White Warbler, *Lath.* Syn. ii. pt. ii. 1783, 480, n. 102 (= Briss. iii. 496).

Dendrœca petechia ruficapilla (*Bd.*). [Porto Rico, etc.]

Chloris erythachorides, *Feuillée,* "Journ. Obs. Phys. iii. 1725, 413" (others quote "*C. eritachoides*").

Motacilla ruficapilla, *Gm.* SN. i. 1788, 971, n. 106 (based on Briss. iii. 490, pl. 22, f. 4, Martinique).—*Turt.* SN. 1806, 597.

Sylvia ruficapilla, *Lath.* IO. ii. 1790, 540, n. 119 (= Gm. 971).—*Steph.* Shaw's Gen. Zool. x. 1817, 699.

Figuier de la Martinique, Ficedula martinicana, *Briss.* Orn. iii. 1760, 490, n. 50, pl. 22, f. 4 (based on Feuillée).

Figuier à tête rousse, *Buff.* "v. 306".

THERE is no occasion to enlarge upon the history of a bird so well known as the Summer Warbler has become by means of the many excellent biographies which previous writers have furnished. The bird is common in the Colorado Basin, as in most other parts of North America, and breeds in all suita-

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Fauvette à tête rousse, *V.* N. D. d'H. N. l. c.

Bloody-side Warbler, *Lath.* Syn. ii. pt. ii. 1783, 489, n. 115 (= Briss. and Buff. as above).—*Penn.* A.Z. ii. 1785, 405, n. 298.—*Steph.* Gen. Zool. x. 1817, 699. (Not of Turton.)

Dendrœca æstiva, *A. & E. Newt.* "Ibis, i. 1859, 143 (St. Croix)".

Dendroica petechia, *Cass.* Pr. Phila. Acad. 1860, 192, 376 (St. Thomas).

Dendroica ——, *Bd.* Rev. AB. 1865, 201 (St. Croix and St. Thomas).

Dendrœca petechia b) cruciana, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 608.

Dendrœca petechia a) bartholemica, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 607.

Dendroica petechia *var.* **ruficapilla,** *B. B. & R.* NAB. i. 1874, 217 (Porto Rico, St. Thomas, St. Croix, and St. Bartholomew).

Dendrœca capitalis, *Lawr.* [Barbadoes.]

Dendrœca ——, *Bd.* Rev. AB. in text of p. 202 (spec. from Barbadoes).

Dendroica capitalis, *Lawr.* Pr. Phila. Acad. 1868, 359.—*B. B. & R.* NAB. i. 1874, 217.

Dendrœca petechia c) barbadensis, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 608.

Dendrœca vieilloti, *Cass.* [New Granada.]

Dendroica erithachorides, *Bd.* BNA. 1858, 283 (not "*Chloris erythachorides* Feuillée").

Dendroica vieilloti, *Cass.* Pr. Phila. Acad. May, 1860, 192 (Panama and Carthagena).—*Bd.* Rev. AB. 1864, 203.—*B. B. & R.* NAB. i. 1874, 217.

Dendrœca vieilloti, *Scl.* Cat. AB. 1862, 33 (includes vars. *bryanti* and *rufigula*).

Rhimamphus ruficeps, *Cab.* J. f. O. for Sept. 1860, pub. Jan. 1861, 326 (includes var. *bryanti*).

? Mniotilta ruficeps, *Gieb.* Nomenc. Av. ii. 1875, 606 (includes other vars.).

Dendrœca petechia i) panamensis?, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 609. (*Quid D. petechia g) peruviana? ; h) æquatorialis? ; Id.* ibid.?)

Dendrœca vieilloti rufigula, *Bd.* [Panama.]

? Sylvia ruficapilla, *Vieill.* Nouv. Dict. d'Hist. Nat. xi. 1817, 228.—*Vieill.* Ency. Méth. ii. 1823, 442, n. 82.—*Vieill.* Gal. Ois. i. 1834, 268, pl. 164. ("L'Amérique." Not of Latham, though Feuillée, and Briss. iii. 490, are quoted. The description clearly indicates one of the birds with the whole head red, but which of the varieties of modern authors may not be determinable. Baird makes it the basis of his *D. rufigula*, queried as West Indian, but really from the Isthmus of Panama.)

? Rhimamphus ruficapilla, *Bp.* CA. i. 1850, 311 (= Vieill.).

Dendroica rufigula, *Bd.* Rev. AB. 1865, 204 (*loc. ignot.*).

Dendroica vieilloti *var.* **rufigula,** *B. B. & R.* NAB. i. 1874, 217 (Panama).

Dendrœca vieilloti bryanti, *Ridgw.* [Mexico.]

Dendroica vieillotii *var.* **bryanti,** *Ridgw.* Am. Nat. vii. 1873, 606.

Dendroica vieilloti *var.* **bryanti,** *B. B. & R.* NAB. i. 1874, 218 (Mexico and Yucatan).

Dendrœca aureola, (*Gould*) *Bd.* [Galapagoes.]

Sylvia aureola, *Gould,* "Voy. Beagle, 1841, 86, pl. 28".

Mniotilta aureola, *Gray,* G. of B. i. 1848, 196.

Sylvicola aureola, *Bp.* CA. i. 1850, 309.

Dendroica aureola, *Bd.* Rev. AB. i. 1865, 194.—*B. B. & R.* NAB. i. 1874, 217.

Dendrœca petechia f) gallapagensis, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 608.

Dendrœca eoa, (*Gosse*) *Bd.* [Jamaica.]

Sylvicola eoa, *Gosse,* B. Jam. 1847, 158.—*Gosse,* Ill. B. Jam. 1849, pl. 34.—*Bp.* CA. i. 1850, 300.

Mniotilta eoa, *Gray,* G. of B. i. 1848, 196.

Dendroica eoa, *Bd.* Rev. AB. 1865, 195.—*B. B. & R.* NAB. i. 1874, 218.

Dendrœca eoa, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 609.

ble places within this area, but probably withdraws entirely in the fall. In the mountains about Fort Whipple, Arizona, I noted its arrival one year on the 25th of April, and saw it not after the second week in September of either of the autumns I passed in that locality. Though the bird is so generally distributed at all altitudes, you would scarcely look for it in the pine woods of the higher mountains; for it loves the less sombre verdure of ravine, hillside, and water-course, and its brilliant yellow plumage is oftenest seen glancing through the cotton-woods and willows that fringe the streams, even far out on the dreary plains; while the sprightly and agreeable song which accompanies its movements at frequent intervals has all the pleasurable associations that are awakened at the sound of a familiar voice—never so attractive as when unexpectedly heard in a far-away place.

A bird so widely distributed as the Summer Warbler is, might be presumed to modify its habits somewhat according to the diverse conditions of its environment. But the present, like other Warblers, is so regular in its periodical movements that it bears little or no local impress,—the reverse, I have no doubt, of the case with the several insular races into which the species has been converted in the West Indies. Its habits are everywhere substantially the same, whatever little changes, particularly in the location and construction of the nest, may be required to meet special conditions. With us, the Summer Warbler is well known to be a confiding bird, rather attracted than repelled by man's presence, fond of nesting in our orchards, gardens, and lawns, even our crowded streets; and the nest, as a rule, is placed rather low down, in some hedge, thicket, or other shrubbery. In the arctic regions, where the bird has been found to be abundant, the nest is said to be usually placed in the low willow bushes of those latitudes. The nest and eggs are too well known to require description; but Mr. Henshaw has left a memorandum that the eggs he took in the West were all pure white in the ground color, lacking the slight greenish shade observed in those laid in the Eastern States.

This Warbler has long been known as one of the birds most frequently victimized by the Cow Bunting, and has become celebrated for the resolution with which it refuses to incubate the alien egg, as well as for the sagacity and determination it displays in making shift to avoid the hateful imposition, even to the length of sacrificing its own eggs and giving up its nest.

It frequently constructs a two-story nest, leaving the Bunting's egg in the cellar; and at least one instance is recorded of the repetition of this laborious and disagreeable work, resulting in a three-story nest some seven inches deep, with a Cowbird's egg in each of the two lower compartments.

Hermit Warbler

Dendrœca occidentalis

Sylvia occidentalis, *Towns.* Journ. Phila. Acad. vii. 1837, 190 (Columbia River); viii. 1839, 153.—*Aud.* OB. v. 1839, 55, pl. 395, f. 3, 4.

Sylvicola occidentalis, *Bp.* CGL. 1838, 23.—*Aud.* Syn. 1839, 60.—*Nutt.* Man. i. 2d ed. 1840, 445.—*Aud.* BA. ii. 1841, 60, pl. 93.—*Bp.* CA. i. 1850, 308.

Mniotilta occidentalis, *Gray,* G. of B. i. 1848, 196.

Dendroica occidentalis, *Bd.* BNA. 1858, 268.—*Coop. & Suck.* NHWT. 1860, 178.—*Bd.* Rev. AB. 1865, 183.—*B. B. & R.* NAB. i. 1874, 266, pl. 12, f. 5.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 201.

Dendrœca occidentalis, *Coues,* Ibis, 2d ser. i. 1865, 163 (Arizona).—*Scl.* ibid. 89 (critical).—*Salv.* Ibis, 2d ser. ii. 1866, 191 (Guatemala).—*Coues,* Pr. Phila. Acad. xviii. 1866, 69 (Fort Whipple).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 611.—*Coop.* B. Cal. i. 1870, 92.—*Coues,* Key, 1872, 97.—*Coop.* Am. Nat. viii. 1874, 16.

Dendrœca peridentalis, *Coop.* Am. Nat. iii. 1869, 480.

Dendrœca chrysoparia, *Scl.* PZS. 1862, 19 (La Parada). (Not of PZS. 1860, 298.)—*Scl.* Cat. AB. 1862, 358 (La Parada).

Dendrœca niveiventris, *Salv.* PZS. 1863, 187, pl. 24, f. 2 (San Geronimo, Guatemala).

Hermit Warbler, Western Warbler, *Authors.*

Hab.—In the United States, Rocky Mountains to the Pacific. South through Mexico to Guatemala.

Ch. sp.—♂ *Suprà cinerea, olivaceo tincta, nigro striata, infrà alba; capite flavo, nigro notato, jugulo et gulâ nigris.*

♂, adult: Above ashy-gray, tinged with olive, especially on the rump, and closely streaked with black; below white. Top and sides of head rich yellow, the former with transverse black markings. Central line of chin, throat, and jugulum black, ending on the breast with a sharp convex outline, contrasted with the adjoining white. Wings and tail as in *virens*. Bill black. Length, 4¾–5; extent, 7¾; wing, 2½–2¾; tail, 2⅛–2¼; tarsus, ⅞–1; bill, ⅔.

♀, adult: This sex, unknown to me, is described as similar to the male, but darker gray above, with the yellow of the head less extended, and the throat whitish, spotted with dusky.

Young: Upper parts olivaceous-ash, and the yellow of the top of the head overlaid with olive. Sides of the head pretty clear yellow, fading gradually into the white of the throat. No black on the throat. White of the under parts faintly brownish-tinged, and sides with obsolete streaks.

There is every gradation between the stages above described. The very earliest plumage is probably still unknown. In a September specimen of mine, taken at Fort Whipple in 1864, the dusky olive extends over all the upper parts, tinging the ashy of the lower back, and reaching on the crown nearly to the bill, where it gradually lightens by admixture of yellow; the sides of the head are clear yellow, soiled with some olivaceous: chin and

throat the same, fading on the breast into the dull white of the other under parts; sides with obsolete streaks, and a slight grayish-olive wash. There is no black whatever about the head or throat, and the blackish streaks of the back are obsolete. The wings are twice barred with the conspicuous white tips of the greater and median wing-coverts.

On the technical questions involved in the consideration of *D. chrysoparia* and *D. niveiventris*, see especially Ibis, 1865, 87.

MY own experience with this Warbler in the field is limited to the summary shooting of one, before I knew what it was, in some thick scrub-oak bushes near Fort Whipple, Arizona, September 3, 1864. In the same Territory, Mr. Henshaw lately collected a series of specimens during August and September, finding the birds in such close association with Townsend's Warblers, and so similar in habits and general appearance, that it was impossible to distinguish the two species at the distance at which they were usually seen. The bird appears to be only a migrant in the Colorado Basin: it passes into Mexico in the fall, along with various other Warblers, and proceeds in some cases at least as far south as Guatemala, always showing an attachment to high pine-clad regions, like those of the far north, where it was originally discovered many years since by Nuttall and Townsend. There is no evidence that it breeds in the southerly portion of our territory; but this lack of positive evidence to such effect does not prevent my surmise that it will, sooner or later, be shown to inhabit the higher pine belts of the Colorado watershed, where it is now only known as a migrant. We have very little information respecting its habits; in fact, nothing beyond our knowledge of its geographical distribution and general movements has been added to the memoranda which its discoverers left us. Mr. Townsend shot his birds, a pair, on the 28th of May, 1835, near Fort Vancouver, whilst they were fluttering through the depths of the pine woods in search of insects; he saw them hanging from the twigs like Titmice, and thought that their notes resembled those of the Black-throated Blue Warbler. Mr. Nuttall's notice is more extended, and furnished the basis of the name "Hermit" Warbler, given in consequence of what he calls the "eremitic predilection" of the bird. He observed it with difficulty in the tops of the pine trees, where it searches for its food, and where, he had no doubt, the nest would also be found. "Its song", he continues, "frequently heard from the same place, at very regular intervals, for an hour or two at a time, is a soft, moody, faint, and monot-

onous note, apparently delivered chiefly when the bird is at rest on some lofty twig, and within convenient hearing of its mate and only companion of the wilderness."

Dr. George Suckley later confirmed these accounts of the inaccessible nature of the bird's favorite haunts, he having found it difficult to reach them with fine shot in the tops of the lofty fir-trees, where they spent most of their time. All these reports indicate that the anchorites were in their summer homes, and inform us of at least one portion of the country in which they do breed, though we must be slow to assert that they may not also breed elsewhere under different conditions. My specimen, as I distinctly remember, was hopping about in a bush close to the ground, showing that the habits of the species are not the same at all seasons of the year.

Townsend's Warbler

Dendrœca townsendi

Sylvia townsendi, "*Nutt.*", *Towns.* Journ. Phila. Acad. vii. 1837, 191 (Columbia River).—*Aud.* OB. v. 1839, 36, pl. 393, f. 1.

Sylvicola townsendi, *Bp.* CGL. 1838, 23.—*Aud.* Syn. 1839, 59.—*Nutt.* Man. i. 2d ed. 1840, 446.—*Aud.* BA. ii. 1841, 59, pl. 92.—*Bp.* CA. i. 1850, 308.

Dendroica townsendi, *Scl.* PZS. 1858, 295, 298; 1859, 374 (Oaxaca).—*B. B. & R.* NAB. i. 1874, 265, pl. 12, f. 5.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 200.

Dendrœca townsendi, *Coues,* Ibis, 2d ser. i. 1865, 163 (Arizona).—*Scl.* Ibis, i. 2d ser. 1865, 89 (critical).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 610.

Sylvia townsendii, *Towns.* Journ. Phila. Acad. viii. 1839, 153.

Mniotilta townsendii, *Gray,* G. of B. i. 1848, 196.

Dendroica townsendii, *Bd.* BNA. 1858, 269.—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*Coop. & Suckl.* NHWT. 1860, 179.—*Bd.* Rev. AB. 1865, 185.—*Turnb.* B. E. Penn. 1869, 53, fig.; Phila. ed. 42 (Pennsylvania).

Dendrœca townsendii, *Coop.* B. Cal. i. 1870, 91, fig.—*Coues,* Key, 1872, 98.—*Coop.* Am. Nat. viii. 1874, 16.

Sylvicola townsendii, *Finsch,* Abh. Nat. iii. 1872, 35 (Alaska).

Sylvia melanocausta, "*Licht.*", "*Brandt,* Ic. Ined. Rosso-As. pl. i. f. 5, ♀" (*fide* Finsch).

Townsend's Wood-Warbler, Townsend's Warbler, *Authors.*

Hab.—Rocky Mountains to the Pacific, from Alaska to Guatemala. (A stray specimen taken near Philadelphia.)

Ch. sp.—♂ *Suprà flavo-viridis, nigro striata; infrà anticè flava, posticè alba, jugulo pectore lateribusque nigro striatis, lateribus capitis nigris flavo circumcinctis.* ♀ *jugulo flavo intertincto (et auricularibus viridibus?).*

♂, adult: Entire upper parts yellowish-olive, rather darker than in *virens*, everywhere streaked with black, especially on the crown, where the black usually predominates; no hidden yellow on the crown. Sides of the head bright yellow, enclosing a large black patch, constituted by the lores and orbital and auricular region, in which the yellow eyelids appear. Chin, throat, breast, and sides part way, yellow, the jugulum black; the sides of the

breast and of the body streaked with black. Under wing-coverts, belly, flanks, and crissum white, the two latter slightly shaded and streaked with dusky. Wings crossed with two white bands, that of the median coverts broadest. Wings and tail fuscous, the former with pale edgings, the latter having two or three outer feathers largely blotched with white. Bill and feet blackish horn-color. Length, about 5; extent, 7¼–8; wing, 2¼–2½; tail, 2.

♀: Like the ♂, but the black of the jugulum mixed with yellow (and that on the sides of the head mixed with or replaced by olive?).

Young: Shade of the upper parts slight brownish, and the black streaks slight, obsolete, or wanting. The dark patch on the side of the head olivaceous, like the back. No continuous black on the jugulum.

Autumnal adults show various gradations between the characters of the old and young. The species is very closely related to *D. virens*, of which it is the Western representative. Adult males are readily distinguished by the darker greenish upper parts, conspicuously streaked, especially on the head, with black; the black cheeks and auriculars; black of jugulum not reaching anteriorly to the bill, and the surrounding yellow spreading on the breast back of the black. Young birds are not so easily discriminated, however; but there are usually traces at least of the black streaks on the upper parts: there is no concealed yellow on the crown; the yellow of the under parts, quite as bright as in the adult, extends far along the breast, behind that part where it veils the black.

The fledgling state of this species is unknown, and some of the characters ascribed to the female should be attested by further material.

TOWNSEND'S Warbler is another species respecting which our knowledge is limited, and does not include any information respecting the nest or eggs. It is one of the many discoveries made during Nuttall and Townsend's journey to the Pacific—an adventurous and toilsome pilgrimage for the purposes of science, fraught with interest to all lovers of nature, and greatly redounding to the advantage of botany and ornithology. The gist of their notices, which long remained our only source of information, is that they found the bird migrating through the coniferous forests of the Columbia River region. This observation long remained unverified; but we have late advices of the bird from Alaska, as far north at least as Sitka. The full extent of its breeding range is not yet ascertained; but I have no doubt that the pine belts of the mountains of the West, from the latitudes even of New Mexico and Arizona, will in the end be found to shelter these birds in summer. During September, they are commonly seen migrating through the Colorado region, and in some situations have been observed in considerable numbers. They press on through Mexico, and find a winter home, in some cases at least, as far south as Guatemala. There is no conclusive evidence that any of them remain

with us through the winter. Dr. Brewer, indeed, says that Dr. Cooper saw one at Shoalwater Bay in December; but on turning to both of Dr. Cooper's works in which this species is mentioned, I find that he only saw at Shoalwater what he "supposed to be this species", and did not secure the specimen. The same gentleman's statement that he shot two specimens in November, 1855, in Santa Clara County, California, furnishes, so far as I am aware, the record of the latest lingering of the species over our border. All of Mr. Henshaw's Arizona specimens were taken in September, during the migration. Mr. C. E. Aiken's Colorado examples were procured in August and September. The extralimital records, from Mexico and Central America, relate, probably without exception, to occurrences in winter or during the migration. We have consequently in this species a bird which occupies the United States in summer from Colorado to Sitka, breeding in an unascertained portion of such extent of country from the Rocky Mountains to the Pacific, and which late in the fall entirely withdraws from the United States to winter in Mexico and Central America. The date of its return in spring over our border is not known. I have already indicated what I presume to be its actual breeding range. In the summer, it is confined to the pine regions, at high elevations in southerly districts, but down to sea-level in the farther north. During the migrations, it is much more generally dispersed; for Dr. Cooper has observed it among low willows and other bushes.

In tracing its distribution and migrations, we should not overlook the unexpected occurrence of this bird, in one exceptional instance, near Philadelphia, as attested by the Rev. Dr. W. P. Turnbull, in his elegant little treatise upon the Birds of East Pennsylvania and New Jersey. A full-plumaged male was shot in Chester County, near the Brandywine, on the 12th of May, 1868, and preserved in his collection.

Mr. Henshaw has left more copious notes than any other writer whom I have consulted in the preparation of this article—for I never saw the bird alive, and have nothing of my own to contribute to its history. He found these Warblers numerous at Mount Graham, in Arizona, during the month of September, though he experienced some difficulty in securing specimens, as the birds kept in the tops of the tallest trees, where only occasional glimpses rewarded the perseverance with which he endeavored to mark them as they dashed out after insects, or

flew from tree to tree in their ceaseless migratory course. At this time and place, they were not among pines, but in forests of spruce and fir, and their flights seemed to be regulated somewhat by the presence or absence of these kinds of conifers. Their motions were extremely rapid; a moment spent in threading the mazes of the interlaced branches,—a few hurried sweeps about the ends of the limbs, and they were off to the next tree to repeat such actions till lost sight of in the density of the forest. Their only note at this season was the chipping sound which many Warblers utter. The writer concludes with the remark, that though he obtained no evidence that the birds breed in Arizona, he saw no reason why the mountain fastnesses of that Territory should not offer a congenial summer home.

Black-throated Gray Warbler

Dendrœca nigrescens

Sylvia nigrescens, *Towns.* Journ. Phila. Acad. vii. 1837, 191 (Columbia River); viii. 1839, 153.—*Towns.* Narr. 1839, 341.—*Aud.* OB. v. 1839, 57, pl. 395.
Vermivora nigrescens, *Bp.* CGL. 1838, 21.—*Nutt.* Man. i. 2d ed. 1840, 471.
Sylvicola nigrescens, *Aud.* Syn. 1839, 60.—*Aud.* BA. ii. 1841, 62, pl. 94.—*Bp.* CA. i. 1850, 308.
Mniotilta nigrescens, *Gray,* G. of B. i. 1848, 196.
Rhimanphus nigrescens, *Cab.* MH. i. 1850, 20.
Dendroica nigrescens, *Bd.* BNA. 1858, 270.—*Scl.* PZS. 1858, 295, 298 (Oaxaca).—*Scl.* PZS. 1859, 374 (Oaxaca).—*Henry,* Pr. Phila. Acad. xi. 1859, 106 (New Mexico).—*Heerm.* PRRR. x. 1859, 40.—*C. & S.* NHWT. 1860, 180.—*Bd.* Ives's Rep. Colo. pt. vi. 1861, 5.—*Bd.* Rev. AB. 1865, 186.—*Sumich.* Mem. Bost. Soc. i. 1869, 547 (Orizaba).—*Aiken,* Pr. Bost. Soc. xv. 1872, 197 (Colorado).—*B. B. & R.* NAB. i. 1874, 258, pl. 12, f. 8.
Dendrœca nigrescens, *Scl.* Cat. 1862, 30 (Oaxaca).—*Coues,* Ibis, 1865, 163 (Arizona).—*Coues,* Pr. Phila. Acad. xviii. 1866, 69 (Arizona).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 610.—*Coues,* Key, 1872, 98.—*Coop.* Am. Nat. viii. 1874, 16.—*Coues,* BNW. 1874, 55, 232.—*Nels.* Pr. Bost. Soc. xvii. 1875, 357 (Cuba).
? Sylvia palpebralis, *Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193 (descr. nullâ).
? Sylvicola tristis, *Nutt.* Man. i. 2d ed. 1840, 472 (scarcely identifiable).
Sylvia halseii, *Gir.* 16 Sp. Tex. B. 1841, fol. 11, pl. 3, f. 1 (♀).
Sylvicola nigricans, *Henry,* Pr. Phila. Acad. vii. 1855, 309 (New Mexico).
Black-throated Gray [*or* **Grey**] **Warbler,** *Authors.*

Hab.—Rocky Mountains to the Pacific, United States; and south into Mexico in winter. Not yet recorded north of the United States. Breeds in suitable places throughout its United States range. Winters extralimital.

Ch. sp.—♂ *Suprà cæruleo-cinerea, dorso medio nigro striato; capite toto et jugulo nigris, maculâ ante oculum flavâ, strigis postoculari et maxillari albis; infrà alba, lateribus nigro striatis.*

♂, adult: Above bluish-ash, the interscapular region, and usually also the upper tail-coverts, streaked with black. Below, from the breast, pure white, the sides streaked with black. Entire head, with chin and throat, black; a sharply-defined yellow spot before the eye, a broad white stripe behind the eye, and a long white maxillary stripe widening behind from the corner of

the bill to the side of the neck. Wings fuscous, with much whitish edging, and crossed with two broad white bars on the ends of the greater and median coverts. Tail like the wings, the three lateral feathers mostly white, except on the outer webs, the fourth with a white blotch. Bill and feet black. Size of the last.

♀: Like the male, but the black of the crown mixed with the ashy of the back, and that of the throat veiled with white tips of the feathers.

Young: Like the ♀, but the crown almost entirely like the back, and the black of the throat still more hidden. Back not streaked. Less white on the tail. Bill not entirely black.

This species varies but little, and chiefly in the intensity and purity of the black of the fore parts. Autumnal specimens of either sex are found in every stage between the extremes above described. In very immature birds, the back has sometimes a slight brownish cast. The curious little yellow spot appears at a very early age; I have never seen it wanting. The fledgling stage I have not seen, nor does it appear to be known.

HERE is the third *Dendrœca* discovered by the indefatigable travellers of whom mention has been made in speaking of the two preceding species. Townsend gives it as abundant in the forests of the Columbia, where he says that it remains until very late in the fall, and builds a nest of fibrous green moss suspended between two small twigs among the upper branches of the oak. Nuttall states that it is seen to arrive in the same region early in May, and infers that it breeds there from the character of the notes that he heard it utter. "On the 23d of May," he continues, "I had the satisfaction of hearkening to the delicate but monotonous song of this bird, as he busily and intently searched every leafy bough and expanding bud for larvæ and insects in a spreading oak, from whence he delivered his solitary note. Sometimes he remained a minute or two stationary, but more generally continued his quest for prey. His song, at short and regular intervals, seemed like *'t shee 't shay t shaitshee*, varying the feeble sound very little, and with the concluding note somewhat slenderly and plaintively raised."

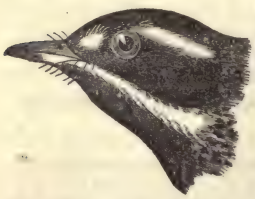

FIG. 34.—Black-throated Gray Warbler.

It was a good many years before we heard of this Warbler again. Meanwhile, the systematists were busy with its name, much as usual, bandying the bird about from one genus to another, but adding nothing whatever to our real knowledge. Drs. Cooper and Suckley met with it in the original locality, or at least in the same general area, and the latter notes that it

generally arrives from the south early in April, is commonly found in oak forests, and is rather abundant in the vicinity of Fort Steilacoom. Dr. Cooper saw a pair at Puget Sound which seemed to have a nest, but he did not succeed in finding it. About the time that these observations were made, we had sudden word of the species from a distant point in Mexico; for M. A. Boucard secured specimens in Oaxaca, Mexico, as Dr. Sclater soon recorded. To this very day these advices remain the northernmost and about the most southerly we have; for the Black-throated Gray has never been traced north of the region in which it was originally discovered, nor yet through Mexico into Central America. Prof. F. Sumichrast has, however, taken it in Orizaba; and there is much reason to suppose that its actual range is not less extensive than that of either *occidentalis* or *townsendi*. As to its longitudinal dispersion, we simply note its spread in suitable forest-clad country from the eastern bases of the Rocky Mountains to the Pacific Ocean, and may next endeavor to trace its movements within this area from the rather fragmentary *indicia* we command.

In California, the late Dr. A. L. Heermann took a few specimens near Sacramento City, and also on the mountain range between the Calaveras and Mokelumne Rivers, during the autumnal migration of 1852, when the bird was found gleaning its insect food in the upper branches of oak trees, and had notes which the observer likened to those of a locust. In the same State, the birds appeared to Dr. Cooper to reach San Diego about the 20th of April, in small flocks, migrating northward, and were not seen after this month. Dr. Suckley's remark of their coming so much farther north in the beginning of the same month is somewhat at variance with the experiences of others, and I suspect he may have meant to say May, not April. During their passage across California, according to Dr. Cooper, the birds haunt low bushes along the coast; but afterward, he says, they take to the deciduous oaks when the leaves begin to grow, early in May, at which time the birds reach the Columbia River. This record of migration squares as to date with what is known of the movements of the species in other longitudes; but the supposed absence of the bird from California after April must be cautiously regarded.

For we have plenty of evidence that the Black-throated Gray nestles all through the mountains of corresponding latitudes east of California. And first for my own observations, made

at Fort Whipple during two seasons. I found the bird common there in the pine forests, and especially numerous during the migrations; but it was also seen through the summer, and unquestionably breeds in that locality. It was first observed about the 20th of April, and did not entirely disappear until toward October. I generally saw it skipping with great agility through the tops of lofty pines, at such height that I could scarcely tell what bird it was until some well-directed shot, perhaps after a tedious poking about with the gun held almost vertically upon my shoulder, brought my victim dropping by stages from one limb to another, and then with a long whirl through the clear space between the lower branches to the ground, sometimes at my very feet. My later spring specimens were some of them in full nuptial attire, and the queer scraping notes which I supposed to come from this species not seldom descended from the leafy canopy where the endless chirpings of the Nuthatches, Titmice, and other little birds were mingled with the rappings of the Woodpeckers and the harsh, sudden outcries of the rowdyish Jays.

In the autumn, these Warblers appeared, of course, in larger numbers, their ranks being recruited by new comers from the north, *en route* to Mexico, land of the mezquite and of "war's revolution"; and at the same season they were also more generally dispersed over the country, on the hillsides clad with scrub oak, and even along the willow-fringed mountain-streams. Mr. Henshaw's observations, very recently made at corresponding latitudes in New Mexico, agree with mine. He found the birds in June in the vicinity of Santa Fé, New Mexico, where they frequented the growths of piñones and cedars that covered the dry foot-hills. The males were then in worn plumage, as if already breeding—an indication confirmed by the non-appearance of the females, who were no doubt too assiduous in their housekeeping to come much in the collector's way. Mr. Ridgway had already found these birds in the East Humboldt Mountains of Nevada, under precisely similar conditions; there they were abundant in piñon and cedar thickets, where they certainly had bred, for he saw families of young following their parents in July and August. In Colorado, says Mr. Aiken, the birds are rather rare migrants, a few probably remaining to breed; they frequent mesas and foot-hills covered with low scrubby piñon, making their appearance about the first of May, when the males precede the females by a few days, and

are heard at frequent intervals to rehearse their curious love-songs as they wage their war of extermination against insects on every leaf and limb.

From such data as these, representing nearly all that is positively known respecting this bird, it is not difficult to make out its movements and mode of life—to see how, entering our territory from the south in April, it disperses to breed over all the coniferous regions of the West, at the higher altitudes only in the south, but down to the general level of the country in regions farther north; how it returns to its winter home, trooping through the whole country irrespective, in a great measure, of the kind of forest vegetation it may encounter; how diligently it forages for its insect prey, and with what repetition the emotions of the nuptial hours are expressed. Such are traits that nearly all Warblers share; but the observant ornithologist finds ample room to enlarge his experiences and increase his sources of thoughtful pleasure in noting those nice points which, like the touches of color upon the plumage, stamp an individuality upon each member of this attractive group of birds.

Cœrulean Warbler

Dendrœca cœrulea

Sylvia cærulea, *Wils.* "AO. ii. 1810, 141, pl. 17, f. 5".

Sylvicola cærulea, "*Sw.*"—*Jard.* "ed. Wils. 1832, —".—*Bp.* CGL. 1838, 23.—*Bp.* CA. i. 1850, 308.—*Hoy,* Smiths. Rep. for 1864, 1865, 438 (Missouri).

Rhimamphus cæruleus, *Scl.* PZS. 1857, 18 (Bogotá); 1858, 64 (Rio Napo).—*Gundl.* J. f. O. 1862, 177 (Cuba).

Dendroica cærulea, *Bd.* BNA. 1858, 280.—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Bd.* Rev. AB. 1865, 191.—*Trippe,* Am. Nat. ii. 1868, 176.—*Brew.* Am. Nat. vi. 1872, 483.—*Gundl.* J. f. O. 1872, 414 (Cuba).—*B. B. & R.* NAB. i. 1874, 235, pl. 13, f. 10, 11.—*Brew.* Pr. Bost. Soc. xvii. 1875, 451 (denied to New England).—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 196 (Denver, Colo.).

Dendrœca cærulea, *Scl.* Cat. AB. 1862, 31.—*S. & S.* PZS. 1864, 347 (Panama).—*Coues,* Pr. Ess. Inst. v. 1868, 274.—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 614.—*S. & S.* PZS. 1870, 836 (Honduras).—*Salv.* PZS. 1870, 183 (Veragua).—*Allen,* Am. Nat. v. 1871, 6.—*Allen,* Am. Nat. vi. 1872, 265.—*Scott,* Pr. Bost. Soc. xv. 1872, 222.—*Coues,* Key, 1872, 99.—*Ridgw.* Am. Nat. vii. 1873, 199.—*Gentry,* Life-Hist. i. 1876, 108.—*Minot,* B. N. Engl. 1877, 114.—*Purdie,* Bull. Nutt. Club, ii. 1877, 21 (Connecticut).—*Merr.* Tr. Conn. Acad. iv. 1877, 15 (Connecticut, two instances).

Dendrœca cærula, *Trippe,* Pr. Bost. Soc. xv. 1873, 245.

Sylvia cœrulea, *Bp.* Journ. Phila. Acad. iv. 1824, 193.—*Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 37.—*Thomps.* N. H. Vermont, 1853, 82.

Sylvicola cœrulea, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.—*Aud.* Syn. 1839, 56.—*Aud.* BA. ii. 1841, 45, pl. 86.—*Woodh.* Sitgr. Rep. Zuñi, 1853, 70.—*Hoy,* Pr. Phila. Acad. vi. 1853, 311 (Wisconsin).—*Henry,* Pr. Phila. Acad. vii. 1855, 309.—*Putn.* Pr. Ess. Inst. i. 1856, 207 (wrongly attributed to Massachusetts).—*Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia; doubtful).

Mniotilta cœrulea, *Gieb.* Nomenc. Av. ii. 1875, 601.

Dendroica cœrulea, *Henry*, Pr. Phila. Acad. xi. 1859, 106.—*Verr.* Pr. Ess. Inst. iii. 1862, 156.—*Turnb.* B. E. Pa. 1869, 25; Phila. ed. 18.—*Hensh.* Rep. Orn. Specs. 1874, 58 (Denver, Colo.).

Dendrœca cœrulea, *Lawr.* Ann. Lyc. N. Y. vii. 1861, 322 (New Granada).—*McIlwr.* Pr. Ess. Inst. v. 1866, 86 (Hamilton, C. W.).—*Coues*, Pr. Bost. Soc. xii. 1868, 110.—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200.—*Coues*, BNW. 1874, 56, 233.—*Jouy*, Field and Forest, iii. n. 3, Sept. 1877, 51 (Washington, D. C.).

Sylvia rara, *Wils.* iii. 1811, 119, pl. 27, f. 2.—*Steph.* Gen. Zool. x. 1817, 657.—*V.* Ency. Méth. ii. 1823, 448.—*Bp.* Journ. Phila. Acad. iv. 1824, 197.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 82.—*Nutt.* Man. i. 1832, 393.—*Aud.* OB. i. 1832, 258, pl. 49.—*Brew.* Journ. Bost. Soc. i. 1837, 436 (Massachusetts—wrong).

Phyllopneuste rara, *Boie*, Isis, 1828, 321.

Vermivora rara, *Jard.* "ed. Wils. 1832".

Mniotilta rara, *Gray*, G. of B. i. 1848, 196.

Sylvia azurea, *Steph.* Shaw's GZ. x. 1817, 653.—*Bp.* Am. Orn. ii. 1828, 27, pl. 11, f. 2.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 85.—*Nutt.* Man. i. 1832, 407.—*Aud.* OB. i. 1832, 255, pl. 48.—*Towns.* Journ. Phila. Acad. viii. 1839, 153 (Oregon ? !).

Hypothimis azurea, *Boie*, Isis, 1828, 318.

Sylvia bifasciata, *Say*, Long's Exp. R. Mts. i. 1823, 170.

Sylvia populorum, *V.* Ency. Méth. ii. 1823, 449, n. 104. (After Wilson.)

Fauvette bérylle, *V.* Ency. Méth. ii. 1823, 448.

Fauvette des Peupliers, *V.* Ency. Méth. ii. 1823, 449.

Fauvette bleuâtre, *Le Moine*, Ois. Canad. 1861, 192.

Cœrulean, Cærulean, *or* **Cerulean Warbler** *or* **Wood-Warbler, Azure Warbler, Blue-green Warbler, White-throated Blue Warbler,** *Authors.*

[NOTE.—*Cœrulea* and *caerulea* are not distinguished; neither are *cœrulea* and *coerulea*.—Note that the "Caerulean Warbler" (*Motacilla* or *Sylvia c.*) of authors before Wilson is *Polioptila*, not *Dendrœca*.—See p. 101.]

HAB.—Eastern North America to the Rocky Mountains in the latitude of Colorado, and to the Lower Missouri. Rare in the Atlantic States; authentic as a bird of New England (Connecticut, *Linsley*, Am. Journ. Sci. xliv. 1843, —; *Purdie, Merriam, ll. ss. cc.*). Canada West (*McIlwraith*). Cuba (*Gundlach*); no other West Indian record. In winter, Central and portions of South America. No Mexican record.

CH. SP.— ♂ *Cœrulea, dorso medio nigro striato; infrà alba, pectore lateribusque fusco-cœruleo striatis, strigâ superciliari albâ, alis albo bifasciatis, rectricibus lateralibus albo notatis.* ♀ *virescens, infrà sordidè flavo-albida, alis caudâque sicut in mare.*

♂, adult: Entire upper parts sky-blue, the middle of the back streaked with black; the crown usually richer and also with dark markings. Below pure white, streaked across the breast and along the sides with dusky blue—the breast-streaks inclining to form a short bar, sometimes interrupted in the middle. Auriculars dusky; edges of eyelids and superciliary line white. Wings blackish, much edged externally with the color of the back, the inner webs of all the quills, the outer webs of the inner secondaries, and two broad bars across the tips of the greater and median coverts, white. Tail black, with much exterior edging of the color of the back, all the feathers, except the middle pair, with small, white, subterminal spots on the inner webs. Length, 4–4½; wing, 2⅜; tail, 2 or less.

♀, adult: Quite different. Upper parts dull greenish, with more or less grayish-blue shade, the greenish brightest and purest on the crown. Eyelids, line over eye, and entire under parts whitish, more or less strongly overcast with dull greenish-yellow. Wings and tail dusky, the exterior edgings of the color of the back; the bars, spots, and interior edgings white, as in

the ♂. The female is curiously similar to the same sex of *D. cærulescens*, but in the latter the tail-spots are different; there are no white wing-bars, but instead there is a small whitish spot at the base of the outer primaries.

The autumnal plumage of the adults is said to differ in no wise from that of the spring. Young males are said to be much like the adult females, but less uniformly greenish-blue above and purer white below, with evident blackish stripes on the interscapulars and sides of the head. The young female resembles the adult of that sex, but is still greener above, with little or no blue, and quite buffy-yellowish below. When in full dress, this is a very pretty bird, there being something peculiarly tasteful and artistic in the simple contrast of the snowy-white with the delicate azure-blue, without any "warm" color.

HAVING left in the "Birds of the Northwest" a sketch of the general geographical distribution of this species, I resume the subject chiefly to enter into detail respecting the western limits of its dispersion, which are wider than is commonly supposed, or than is indicated by Dr. Brewer's latest contribution to its history. It will be remembered that not long after Wilson's original notice of the bird, Thomas Say described it under the name of *Sylvia bifasciata* in Major Long's Expedition to the Rocky Mountains, and such hint of its westward extension has very recently been verified by Mr. Henshaw, who saw a Warbler, "unquestionably of this species", on the 17th of May, whilst he was collecting in the vicinity of Denver, Colorado. The bird had not previously been recognized from west of the Plains. Woodhouse, however, gave it as breeding in abundance in the Indian Territory, and Allen as common about Fort Leavenworth, Kansas. These are the principal Western records. For though it is true that Audubon assigns it to the "Columbia River" on Townsendian authority, there is probably some mistake about this—at any rate, I continue to discredit the statement. The Mississippi Valley, in a broad sense, seems to be the bird's main area of distribution, where only is it at all abundant. In the Atlantic watershed, it is certainly one of our rarer species, though apparently of general dispersion; but there is now no doubt that it enters New England. Audubon, indeed, ascribes it to Nova Scotia, and it would not be likely to reach that island without passing by New England. Audubon says explicitly, "the northeastern point at which I have known it to be procured is the neighborhood of Pictou, Nova Scotia"; but gives no authority nor any circumstances of observation. So long ago as 1837, Dr. Brewer gave "*Sylvia rara*" as a bird of Massachusetts, and for many years the species has been

currently attributed to New England, by myself as well as by others. Nearly all the later citations to such effect, however, have rested upon the appearance of the name in F. W. Putnam's List of the Birds of Essex County, Mass., published in 1856; but Dr. Brewer "recently ascertained by careful enquiry" that the species Mr. Putnam had in view was the Black-throated Blue Warbler, *D. cærulescens*. This left the bird without authentic Massachusetts record, and caused Dr. Brewer, ignoring his 1837 announcement, to deny the bird to New England in 1875. In 1874, in the "Birds of the Northwest", I simply queried the occurrence of the species in that part of the country, considering that Linsley's Connecticut record of 1843 needed confirmation, though my other sources of information, such as Lawrence's New York List of 1866, left me in no real doubt of its presence in the Connecticut Valley—a fact fully confirmed by Mr. Purdie's and Mr. Merriam's respective records above cited. The only authoritative record I know of the occurrence of the bird north of our boundary is that above cited, furnished by Mr. McIlwraith, of Hamilton, Canada West. In the Middle States, the Cœrulean Warbler is certainly rare; it is so given by Dr. Turnbull for Pennsylvania, and Dr. Prentiss and I never saw it alive in the District of Columbia; though it has been got in this place on more than one occasion, the last being an instance of which I am informed by Mr. L. P. Jouy, of Washington, who happens into my study with the information, by a curious coincidence, as I pen this very article (October 16, 1877), and who published the case in the number of "Field and Forest" above cited, which appeared a few days afterward.

The Cœrulean Warbler entirely withdraws from the United States in the fall. It is singular that we have no Mexican record, and that our only West Indian one is from Cuba. For aught that we know to the contrary, the bird makes for Central America, and winters in Yucatan, Guatemala, the Isthmus, and New Granada, even pushing as far in South America as the Rio Napo.

Good fresh observations respecting the nest, eggs, and breeding habits of the Cœrulean Warbler are wanted, as the present generation of ornithologists knows nothing of these matters but what it has inherited from the last one.

Audubon's Warbler

Dendrœca auduboni

Sylvia auduboni, *Towns.* Journ. Phila. Acad. vii. 1837, 191 (Columbia River); viii. 1839, 153.
Sylvicola auduboni, *Bp.* CGL. 1838, 21.—*Aud.* Syn. 1839, 52.—*Nutt.* Man. i. 2d ed. 1840, 414.—*Gamb.* Pr. Phila. Acad. iii. 1846, 155.—*Gamb.* Journ. Phila. Acad. i. 1847, 37.—*Bp.* CA. i. 1850, 307.
Mniotilta auduboni, *Gray,* G. of B. i. 1848, 196.
Dendroica auduboni, *Scl.* PZS. 1858, 295, 298 (Oaxaca).—*Xant.* Pr. Phila. Acad. xi. 1859. 191.—*Hold. & Aiken,* Pr. Bost. Soc. xv. 1872, 197.—*B. B. & R.* NAB. i. 1874, 229, pl. 13, f. 1.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 174.
Dendrœca auduboni, *Scl.* PZS. 1860, 250 (Orizaba).—*S. & S.* Ibis, ii. 1860, 273 (Guatemala).—*Scl.* PZS. 1864, 172 (City of Mexico).—*Coues,* Ibis, 2d ser. i. 1865, 163 (Arizona).—*Coues,* Pr. Phila. Acad. 1868, 83 (Arizona).—*Brown,* Ibis, 2d ser. iv. 1868, 420 (Vancouver).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 613.—*Trippe apud Coues,* BNW. 1874, 232.—*Nels.* Pr. Bost. Soc. xvii. 1875, 357.—*Frazar,* Bull. Nutt. Club, ii. 1877, 27 (Cambridge, Mass.!).
Sylvia audubonii, *Aud.* OB. v. 1839, 52, pl. 395.
Sylvicola audubonii, *Aud.* BA. ii. 1841, 26, pl. 77.—*Woodh.* Sitgr. Rep. Zuñi, 1853, 71.
Dendroica audubonii, *Bd.* BNA. 1858, 273.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 10.—*Kenn.* PRRR. x. 1859, 24.—*Heerm.* ibid. 39.—*Coop. & Suck.* NHWT. i. 1860, 181.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 160.—*Bd.* Rev. AB. i. 1865, 188.—*Coop.* Am. Nat. iii. 1869, 33.—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 463.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 675, 713.
Dendrœca audubonii, *Coues,* Pr. Phila. Acad. xv. 1866, 69.—*Coop.* B. Cal. i. 1870, 88, fig.—*Coues,* Key, 1872, 100,—*Coues,* BNW. 1874, 53.—*Coop.* Am. Nat. viii. 1874, 16.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 10.—*Hensh* ibid. 41, 58, 75, 102.—*Nels.* Pr. Bost. Soc. xvii. 1875, 343.
Dendroica audubonis, *Bd.* Ives's Rep. Colo. R. pt. vi. 1861, 5.
Dendroica coronata *var.* **auduboni** [!], *Ridgw.* Bull. Ess. Inst. v. 1873, 180 (Colorado).
Audubon's Warbler, Western Yellow-rump, *Authors.*

Hab.—From the easternmost bases and outlying foot-hills of the Rocky Mountains to the Pacific, United States and British Columbia; probably also to Alaska. South in winter through Mexico to Guatemala. Accidental in Massachusetts.

Ch. sp.—♂ *Cœruleo-cinerea, dorso nigro striato; vertice medio, uropygio, gulâ et lateribus pectoris, flavis; pectore nigro, abdomine albo, lateribus nigro-striatis;* ♀ *brunneo-cinerea, pectore nigro maculato.*

♂, *adult,* in summer: Upper parts clear bluish-ash, streaked with black. A central longitudinal spot on the crown, the rump, throat, and a patch on each side of the breast, rich yellow. Sides of the head little darker than the upper parts; eyelids narrowly white, but no decided superciliary white stripe. The ash of the upper parts extending far around the sides of the neck. Jugulum and breast in high plumage pure black, though usually mixed with some grayish skirting of the feathers, or invaded by white from behind, or even touched with yellow here and there. Belly and under tail-coverts white, the sides streaked with black. Wings blackish, with gray or white edging, especially on the inner quills; the median wing-coverts tipped, the greater ones edged and tipped, with white, forming a great white blotch. Tail like the wings, the outer webs narrowly edged with gray or white, the

inner webs of all the lateral feathers with large white blotches. Bill and feet black. One of the larger species. Length, 5¼–5¾; extent, 8¾–9½; wing, 2¾–3; tail, 2¼.

♀, in summer: Generally similar to the ♂. Upper parts duller and browner slate-color, with less heavy dorsal streaks; crown-spot and other yellow parts paler; breast not continuously black, but variegated with black, white, and the color of the back. Sides only obsoletely streaked. Eyelids scarcely white, and cheeks hardly different from the back. White of wing-coverts mostly restricted to two bars; white tail-spots smaller.

Both sexes in autumn and winter, and young: Upper parts quite brown, with obscure black marking. Yellow crown-spot concealed or wanting; yellow of throat, rump, and sides of breast paler and restricted. Under parts whitish, shaded on the sides, and usually across the breast, with a dilute tint of the color of the back, the breast and sides obsoletely streaked with darker. White of wing-coverts obscured with brownish.

Very young: No yellow anywhere. Everywhere streaked; above with blackish and brownish ash, below with dusky and whitish. Wings and tail much as in the autumnal plumage of the adult.

The full breeding dress of this species is worn but a short time. The spring moult is usually not completed until some time in May, as early May and all April specimens show more or less evident traces of the dull brown winter plumage, mixed with the clear slate-color. September and October specimens are much the same. The early streaked condition is very brief, the distinctive marking of the species soon appearing.

In comparing this species with *D. coronata*, its Eastern representative, the very marked character of restricted yellow throat, in contrast with the more extensively white throat of *D. coronata*, has drawn attention from other equally good characters. In *D. coronata*, in full plumage, the whole sides of the head are pure black, bounded above by a white superciliary line; whereas this part is little darker than the back in *auduboni*, and there is no white line. The breast of *D. coronata* does not appear to be ever continuously black, nor do the two white bars on the wings fuse completely into a large white patch. Younger and autumnal or winter specimens are more similar, but the distinctive yellow throat of *auduboni* shows at least in traces at a very early age, and is always distinctive. In the very earliest streaky stage, the two species are indistinguishable.

ALL things considered, we may fairly regard Audubon's Warbler as the most characteristic species of the genus *Dendræca* in the West. Not that it is more specially indicative of the fauna from the Rocky Mountains to the Pacific than *D. townsendi*, *D. occidentalis*, and *D. nigrescens* respectively are; but that it is much more abundant and more equably diffused over the country than any one of the three other species just mentioned are known to be. It almost entirely replaces the Yellow-rump Warbler or Myrtle-bird in this region, and in fact forms its exact Western representative, being equally common and no less conspicuous among the small insectivorous birds

which throng the forests and thickets of the entire West. It is a fourth species of *Dendræca* discovered by Nuttall and Townsend, completing their additions to our knowledge of the varied exhibitions of bird-life which compose this extensive genus. Their original accounts of the bird are not entirely consistent, nor as satisfactory in other respects as could be desired, but we have gradually come into possession of the materials for a tolerably complete biography.

Not the least interesting point in the history of Audubon's Warbler is its recent occurrence on the side of the continent where it does not properly belong. Mr. A. M. Frazar has this year published a note of his capture of a specimen at Cambridge, Mass., on the 15th of November, 1876. As he says that it was a fine male specimen, with the yellow of the throat very plainly marked, there is no reason to doubt the accuracy of his identification; and we may match the case with that of the Townsend's Warbler which lately wandered into Pennsylvania. This estray aside, Audubon's Warbler has never been known to come eastward beyond the line of arboreal vegetation which marks the easternmost foot-hills and outlying elevations of the Rocky Mountains. As soon as we fairly enter the wooded tracts, as distinguished from those slight fringes of trees that straggle along the water-courses, we are pretty sure to find Audubon's Warbler, and we may find it anywhere, so we be in the woods at the right season, thence to the Pacific. The northern limit of its distribution is a little uncertain. The bird is known to enter British Columbia, and I have myself observed it on the headwaters of the Saskatchewan, on the northern border of Montana. Though we have as yet no Alaskan record, we should be slow to infer that it does not reach at least part way through that country—as far as the Pacific fauna proper extends. *D. coronata* is found there, Alaska being doubtless the region whence come those straggling Yellow-rumps that occasionally turn up in the Pacific region. *D. audubòni* is no less hardy a bird than its Eastern analogue, and its northwestern restriction, wherever the line may actually be drawn, is inferably determined by the topographical rather than climatic conditions, which are well known to carry the Eastern Province proper to the very shores of the Pacific in the higher latitudes. In the opposite direction, Audubon's Warbler is known to penetrate through Mexico and to reach various portions of Central America, where again, as at the far North, it greets its Eastern

cousin; for Mr. Albert Salvin found both Eastern and Western Yellow-rumps together, at San Geronimo, in November, 1859.

As to the local and seasonal movements of Audubon's Warbler within the extensive area thus sketched: The bird is migratory, like all the rest of our Warblers, and the "tidal wave" passes twice a year, bearing the vast majority of individuals north in spring and south in autumn. The extent of the spring movement seems to be sufficient to bring all those that entered Mexico the previous fall back into the United States; at any rate, if some linger to breed in even the most elevated portions of Mexico, the fact has not become known to us. The body of birds thus thronging over our border takes upon itself two movements: one of these, the ordinary to-and-fro migration, spreads the species in latitude, until the limits of its geographical range are attained; the other is an up-and-down movement, equally obvious and decided, though of course less extensive, which carries the species into suitable breeding grounds, at the higher elevations of the lower latitudes. Thus a breeding range is secured which is almost coextensive, geographically speaking, with the entire United States range of the species, yet entirely dependent upon topographical features of the country; for while at the North the birds may breed anywhere, down to sea-level, at the South their nesting-grounds are found only along certain lines or in certain spots that attain sufficient elevation. There is nothing peculiar in this; in fact, it is the rule equally applicable to various other migratory birds. The case of *D. auduboni*, however, is notable among the Warblers, as that of *D. coronata* also is, in that the winter range of the species is unusually extensive; for only a part, perhaps only a small proportion, of the individuals composing the species withdraw from the United States in the fall. How far north the bird may be enabled by the hardiness of its constitution to endure the rigors of winter is not fully known, for ornithologists are neither numerous nor active at this season in the Rocky Mountains. But the bird has been seen in Washington Territory in March, which is long before any general migration of birds occurs in that latitude; and the probability is that the lower levels and sheltered situations generally may harbor numbers of the birds in winter, even toward the northern extremes of their *habitat*, just as the Eastern Yellow-rumps are sometimes seen in Massachusetts at the same season. However this may be, it is certain that the lower portions of the Colorado Basin, and of the coun-

try generally at corresponding latitudes in the Pacific watersheds, are witness of the birds through the winter. In such latitudes, the species, as a species, is resident; but it by no means follows that the individuals which we see there in the winter are those that were bred in the vicinity. In the nature of the case, the question is not likely to be decided; but the probability is, to judge from analogy, that the winter representatives of the species in New Mexico, Arizona, and Southern California consist mainly of Northern-born birds which have migrated southward, and that Mexico and Guatemala are supplied from more southerly broods, that may have been raised in the very latitudes where others of the species pass the winter. Should such be the case, we see clearly that the migratory impulse is carried out in all cases, even though Audubon's Warblers may be found in certain areas at all seasons of the year. I think, however, that we are all unconsciously apt to be biassed respecting the general subject of the migrations of birds, by too close reliance upon the north-south lines of movement, to the extent of underrating the lateral and the up-and-down ranges of species, which are particularly noticeable in countries much diversified by mountains. For instance, the Black Snowbird is commonly supposed to come from the North in the fall, and so it certainly does; but its sudden appearances, dependent upon changes of the weather, remained unaccountable till it was learned that the bird breeds in the mountains even as far south as Virginia and North Carolina, and flies up and down, according to exigencies of the weather.

The general statements I have made respecting the movements of Audubon's Warbler are gathered from sources too numerous to be spread in full upon this record; but I shall recount some of the more prominent observations which are at our service. In Colorado State, according to Mr. T. M. Trippe, Audubon's Warbler is abundant, migratory, and breeds from an altitude of 9,000 or 9,500 feet up to timber-line. It reaches Idaho from the South about the middle of May, goes higher up to breed, and rears its young during the latter part of June and in July, in the dense spruce forests of the mountain-sides, whence it begins to descend in August, becomes common in the lower parts of the country in September, and disappears by October. In the same State, Mr. Aiken says this Warbler is a common summer resident, particularly numerous during the migrations, when it is dispersed over the whole country from

the stunted pines of the timber-line to the deciduous trees and bushes bordering the streams of the Plains, but during the breeding season restricted to an altitude of 8,000 to 10,000 feet, where they rear their young in the fastnesses of the pines and aspens. He found it as early as April 16, but it does not become numerous till some time afterward. Henshaw saw it about Denver early in May, and found it tolerably common on the pine-clad mountains of Southern Colorado from about 9,000 feet upward. The birds had paired by the 1st of June, and a finished but still empty nest was discovered a week later on the top of a small spruce some thirty feet high. This nest was composed of bark strips firmly and neatly woven, with a lining of fine grasses; it was four inches in diameter and an inch deep. In Arizona, the same diligent and observing naturalist ascertained that these Warblers breed in the White Mountains, where he took young just from the nest on the 12th of July, even so far south as Mount Graham, where the young birds were just beginning their new plumage on the 1st of August. At Fort Whipple, in the same Territory, I found these Warblers to be extremely abundant—as much so as I ever saw Yellow-rumps in the East—during both the vernal and the autumnal migrations. I thought then that they bred in the neighboring mountains at higher elevations, and am now satisfied that such is the case. I used to find them while they were on the move in almost any situation, but they were specially conspicuous by reason of their numbers and their activity in the cottonwood trees and mixed undergrowth along the various mountain streams from the 20th of April to the 10th of May, and again during the month of October. They were also seen occasionally during the winter, even at this elevation, and Dr. Cooper attests their presence in numbers at the same season along the Colorado River, at Fort Mojave. The experience of the last named with the birds in California accords with what has gone before. He obtained newly-fledged birds at Lake Tahoe in September, and considers it probable that they breed throughout the higher ranges of the Sierra Nevada. At Santa Cruz, latitude 37°, and down to sea-level, the birds did not appear until the end of September; some winter there; about the 20th of March, the dull plain garb is quickly exchanged for the gay vernal attire, and the birds are off by the middle of April. Great numbers, he says, winter in various portions of Southern California, where they flutter and chirp among the weeds of the

plains as well as in the woods. They retire toward the north in April, none being seen after May, even in the Coast Range south of San Francisco, though they reappear in September. According to Heermann, they winter in California as far north as Sacramento, and Cooper is inclined to believe that some remain, in mild winters, in the Columbia River region. In Nevada, Ridgway states this beautiful Warbler inhabits chiefly the pine forests of the higher mountain-ranges during the summer, but also frequents the cedar and piñon woods of the desert mountains, descending thence to the lower portions of the country, where it haunts the shrubbery of the water-courses, precisely after the manner of the Eastern Yellow-rump. In Montana, at latitude 49°, and at an elevation of about 4,500 feet, I found Audubon's Warblers abundant, and evidently at their birth-place, as the time was August, and before any migration had begun.

But it is needless to multiply quotations further. The only nest of Audubon's Warbler I have ever seen is the one in the National Museum, transmitted from Vancouver by the late Mr. J. Hepburn, who affirms that the structure may be placed indifferently in the upper branches of trees or in bushes only a few feet from the ground; and that the eggs, to the number of four, are white, with red markings, chiefly about the larger end. The nest just spoken of was built in the crotch formed by three forks of an oblique stem, its shape consequently being obliquely conical. The exterior of the nest is composed of rather coarse strips of fibrous bark and weeds variously intertwined, the main substance consisting of fine grasses, mosses, and rootlets, mixed with some large feathers and bits of string, these miscellaneous materials being closely matted or felted; and the interior is finished off with an abundant lining of horse-hairs.

The general habits of Audubon's Warbler indicate no traits of character that are not shared by its very well-known Eastern relative, the familiar Yellow-rump. In some parts of the country, as in Eastern Colorado, and also in Guatemala, the two species are found together, behaving exactly alike. Mr. Salvin noticed them thus associated at San Geronimo, where they congregated on the ground, and got most of their food in this way. One difference, however, between the two birds has been attested by independent observers. Mr. Trippe likens their ordinary chirping note to one of the sounds uttered by the Barn Swallow, while Mr. Ridgway speaks of their feeble '*wit*' as some-

thing quite unlike the loud, sharp '*chip*' of the Eastern Yellow-rump. The full song of the bird has never, to my present recollection, greeted my ears; Mr. Trippe, who has heard it, calls it "a simple little carol", and Nuttall says it is like that of the Summer Warbler, but superior in style of execution.

Yellow-rumped Warbler

Dendrœca coronata

Motacilla coronata, *L.* SN. i. 1766, 333, n. 21 (Edw. pl. 298).—*Bodd.* Tabl. PE. 1783, 44, pl. 709, f. 1 (*Fauvette ombrée de la Louisiane*).—*Gm.* SN. i. 1788, 974, n. 21 (Briss. Buff. Edw. Penn. and Lath.).—*Turt.* SN. i. 1806, 599.

Sylvia coronata, *Lath.* IO. ii. 1790, 538, n. 115.—*V.* OAS. ii. 1807, 24, pls. 78, 79.—*Wils.* AO. ii. 1810, 138, pl. 17, f. 4; ii. 356, pl. 45, f. 3.—*V.* N. D. d'H. N. xi. 1817, 178.—*Steph.* Gen. Zool. x. 1817, 636.—*V.* Ency. Méth. ii. 1823, 426, n. 25.—*Bp.* Journ. Phila. Acad. iv. 1824, 192.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 77.—*Licht.* "Preis-Verz. Mex. Vög. 1830, 2" (J. f. O. 1863, 57).—*Less.* Tr. Orn. 1831, 418.—*Nutt.* Man. i. 1832, 361.—*Aud.* OB. ii. 1834, 303, pl. 153.—*D'Orb.* Ois. Cuba, 1839, 60.—*Peab.* Rep. Orn. Mass. 1839, 307.—*Thomps.* Vermont, 1853, 80.—*Gieb.* Vög. 1860, 56, f. 110.—*Weiz,* Pr. Bost. Soc. x. 1866, 267 (Labrador).

Sylvicola coronata, *S. & R.* FBA. ii. 1831, 216.—*Bp.* CGL. 1838, 22.—*Vig.* Zoöl. Voy. Bloss. 1839, 16.—*Aud.* Syn. 1839, 51.—*Nutt.* Man. i. 2d ed. 1840, 411.—*Aud.* BA. ii. 1841, 23, pl. 76.—*Gosse,* B. Jam. 1847, 155.—*Denny,* PZS. 1847, 38.—*Bp.* CA. i. 1850, 307.—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Hoy,* Pr. Phila. Acad. vi. 1853, 310.—*Read,* ibid. 398.—*Woodh.* Sitgr. Rep. Zuñi R. 1853, 71.—*Reinh.* J. f. O. 1854, 439 (Greenland).—*Henry,* Pr. Phila. Acad. vii. 1855, 309.—*Bry.* Pr. Bost. Soc. 1855, 142 (Massachusetts, in January).—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Pratten,* ibid. 601.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Salé,* PZS. 1857, 231 (San Domingo).—*Maxim.* J. f. O, vi. 1858, 114.—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Martens,* J. f. O. 1859, 213 (Bermudas).—*Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Bland,* ibid. 287 (Bermudas).—*Brew.* Pr. Bost. Soc. vii. 1860, 306 (Cuba).—*Albrecht,* J. f. O. 1861, 52 (Bahamas).—*Albrecht,* J. f. O. 1862, 194, 201 (Jamaica).—*Hoy,* Smiths. Rep. for 1864, 1865, 437 (Western Missouri).—*Bry.* J. f. O. 1866, 184 (Porto Rico).—*Bry.* Pr. Bost. Soc. x. 1866, 251 (the same).—*Bry.* Pr. Bost. Soc. xi. 1867, 91 (San Domingo).—*Trippe,* Pr. Ess. Inst. vi. 1871, 114.

Mniotilta coronata, *Gray,* G. of B. i. 1848, 196.—*Cabot,* Naum. ii. Heft iii. 1852, 65.—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Reinh.* Ibis, iii. 1861, 5 (Greenland).

Rhimanphus coronatus, *Cab.* MH. i. 1850, 19.

Rhimamphus coronatus, *Gundl.* J. f. O. 1855, 473; 1861, 408 (Cuba).—*Scl.* PZS. 1856, 291 (Cordova).

Dendroica corona a, *Gray,* List of G. of B., App., 1842, 8.—*Bd.* BNA. 1858, 272.—*Scl.* PZS. 1858, 295 (Cordova).—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*Henry,* Pr. Phila. Acad. xi. 1859, 106.—*C. & S.* NHWT. 1860, 187 (Washington Territory).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 407 (Washington, D. C.; wintering).—*Boardm.* Pr. Bost. Soc. ix. 1862, 125 (Maine, breeding).—*Verr.* Pr. Ess. Inst. iii. 1862, 147.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 160 (Dakota).—*March,* Pr. Phila. Acad. xv. 1863, 292 (Jamaica, breeding).—*Allen,* Pr. Ess. Inst. iv. 1864, 62.—*Bd.* Rev. AB. 1865, 187.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Laredo, Tex.).—*Trippe,* Am. Nat. ii. 1868, 171.—*Dall & Bann.* Tr. Chicago Acad. i. 1869, 278 (Alaska, breeding).—*v. Frantz.* J. f. O. 1869, 293 (Costa Rica).—*Turnb.* B. E. Pa. 1869, 24; Phila. ed. 17.—*Abbott,* Am. Nat. iv. 1870, 543.—*Dall,* ibid. 600.—*Parker,* Am. Nat. v. 1871, 168.—*Brew.* Pr. Bost. Soc. xv. 1872, 4 (nesting; Maine).—*Gundl.* J. f. O. 1872, 413 (Cuba).—*Aiken,* Pr. Bost. Soc. xv. 1872, 196 (Colorado).—*Ridgw.* Bull. Ess. Inst. v. 1873, 180 (Colorado).—*B. B. & R.* NAB. i. 1874, 227, pl. 12, f. 9, 12.—*Hensh.* Rep. Orn. Specs. 1874, 58 (Colorado).—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 193.

Dendroica coronatus, *Gundl.* J. f. O. 1861, 326 (Cuba).

Dendrœca coronata, *Scl.* PZS. 1859, 363 (Xalapa).—*Lawr.* Ann. Lyc. N. Y. viii. 1863, 6 (New Granada).—*Blak.* Ibis, v. 1863, 62.—*S. & S.* PZS. 1864, 347 (Panama).—*Dress.* Ibis, 2d ser. i. 1865, 478 (Texas).—*McIlwr.* Pr. Ess. Inst. v. 1866, 85.—*Brown,* Ibis, 2d ser. iv. 1868, 420 (Vancouver).—*Coues,* Pr. Bost. Soc. xii. 1868, 109.—*Coues,* Am. Nat. ii. 1868, 161.—*Coues,* Pr. Ess. Inst. v. 1868, 272.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 613.—*Cope,* Am. Nat. iv. 1870, 395, 396.—*Coop* B. Cal. i. 1870, 89, figs.—*S. & S.* PZS. 1870, 836 (Honduras).—*Coues,* Pr. Phila. Acad. xxiii. 1871, 20.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 363.—*Trippe,* Am. Nat. vi. 1872, 47.—*Allen,* Am. Nat. vi. 1872, 265, 359.—*Purdie,* Am. Nat. vii. 1873, 693.—*Mayn.* B. Fla. 1873, 51.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235.—*Merr.* Am. Nat. viii. 1874, 7, 8.—*Coues,* BNW. 1874, 57.—*Trippe,* ibid. 232 (Colorado, abundant).—*Gentry,* Life-Hist. i. 1876, 109.—*Minot,* B. N. Engl. 1877, 124.—*Merr.* Tr. Conn. Acad. iv. 1877, 16.

Figuier couronné d'or, *Buff.* "Hist. Nat. Ois. v. 312".

Fauvette couronnée d'or, *V.* Ency. Méth. ii. 1823, 426.

Figuier cendré tacheté de Pensilvanie, Ficedula pensilvanica cinerea nævia, *Briss.* Orn. vi. 1760, App. p. 110, n. 81 (Edw. pl. 298) (first basis of *Mot. coronata* Gm.).

Golden-crowned Flycatcher, *Edw.* Gl. pl. 298 (sole basis of *Motacilla coronata* Linn.).

Golden-crowned Warbler, *Lath.* Syn. ii. pt. ii. 1783, 486, n. 111.—*Penn.* A Z. ii. 1785, 403, n. 294.

Motacilla canadensis, *L.* SN. i. 1766, 334, n. 27 (based on Briss. iii. 524, pl. 27, f. 1; *nec L.* SN. p. 336, n. 42, which is *Dendrœca cœrulescens*).

Motacilla cincta, *Gm.* SN. i. 1788, 980, n. 27 (= *M. canadensis* L. n. 27 + *Belted Warbler,* Penn. & Lath.).—*Lath.* IO. ii. 1790, 539, n. 116.—*Turt.* SN. i. 1806, 604.

Figuier à ceinture, *Buff.* "Hist. Nat. Ois. v. 303".

Figuier cendré de Canada, Ficedula canadensis cinerea, *Briss.* Orn. iii. 1760, 524, n. 67, pl. 27, f. 1 (basis of *Mot. canadensis* Linn. n. 27, *nec* n. 42).

Belted Warbler, *Penn.* A Z. ii. 1785, 408, n. 306.—*Lath.* Syn. ii. pt. ii. 1783, 487, n. 112.

Mésange de Virginie, Parus virginianus, *Briss.* Orn. iii. 1760, 575, n. 14 (quotes Klein, 74, n. 8, and Catesby, 58).

Parus virginianus, *L.* SN. i. 1766, 342, n. 9 (Catesby and Briss.).—*Gm.* SN. i. 1788, 1010, n. 9.—*Lath.* IO. ii. 1790, 567, n. 15.—*Turt.* SN. i. 1806, 625.—*Steph.* Gen. Zool. x. 1817, 50.

Luscinia uropygio luteo, *Klein,* "Av. 74, n. 8".

Virginian Titmouse, *Lath.* Syn. ii. pt. ii. 1785, 546, n. 13.—*Penn.* A Z. ii. 1785, 423, n. 325.

Yellow-rump, Parus uropygeo luteo, *Catesby,* Car. i. 1771, 58, pl. 58 (not *Yellow-rumped Warbler* of Lath. and Penn., which is *D. maculosa*). (Basis of *Parus virginianus* Linn.)

Mésange à croupion jaune, *Buff.* "Hist. Nat. Ois. v. 453".

Fauvette à croupion jaune, *V.* N. D. d'H. N. xi. 1817, 180.—*V.* Ency. Méth. ii. 1823, 444.

Motacilla umbria, *Gm.* SN. i. 1788, 959, n. 70 (Buff. v. 162; PE. 709, f. 1, &c.).—*Turt.* SN. i. 1806, 589.

Sylvia umbria, *Lath.* IO. ii. 1790, 518, n. 34.

Fauvette ombrée de la Louisiane, *Buff.* "Hist. Nat. Ois. v. 162".

Fauvette tachetée de la Louisiane, *Buff.* PE. 709, f. 1.

Dusky Warbler, *Penn.* A Z. ii. 1785, 410, n. 309.

Umbrose Warbler, *Lath.* Syn. ii. pt. ii. 1783, 437, n. 30 (PE. 709, f. 1).

Motacilla pinguis, *Gm.* SN. i. 1788, 973, n. 115 (based on Buff. Penn. and Lath.).—*Turt.* SN. i. 1806, 598.

Sylvia pinguis, *Lath.* IO. ii. 1790, 543, n. 132.

Figuier grasset, *Buff.* "Hist. Nat. Ois. v. 319".

Grasset Warbler, *Penn.* A Z. ii. 1785, 411, n. 314.—*Lath.* Syn. ii. pt. ii. 1873, 496, n. 127.

Figuier du Mississipi, PE. 731, f. 2 (generally assigned to *Dendrœca pennsylvanica*).

Sylvia flavopygia, *V.* OAS. ii. 1807, 47 (usually wrongly quoted as "*xanthopygia*". = *Parus virginianus* L. Gm.).

Sylvia xanthorhoa, *V.* N. D. d'H. N. xi. 1817, 180 (after Catesby).

Sylvia xanthoroa, *Vieill.* Ency. Méth. ii. 1823, 444, n. 87.

Parus cedrus, uropygio flavo, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 292.

Bec-fin couronné, *D'Orb.* l. c.

Fauvette couronnée, *V.* OAS. ii. 1807, 24.—*Le Moine,* Ois. Canad. 1861, 190.

Yellow-crowned Warbler, Yellow-crowned Wood Warbler, Yellow-rumped Warbler, Yellow-rump, Myrtle-bird, *Authors.*

HAB.—North America, but chiefly the Eastern Province. In the North-west, extends across the continent; thence some individuals straggle south-

ward along the Pacific side to Washington, and probably Oregon and California. North to the Arctic coast; Greenland. West to the Rocky Mountains in the latitude of Colorado, where common. West in the Missouri region into Dakota, and nearly across that Territory in the Mouse River area. South into Mexico and Central America and various of the West India Islands. Breeds mostly north of the United States, but also in Northern New England; and also in Jamaica. Winters anywhere in the United States from the latitude of Southern New England southward, and also in the subtropical and tropical countries just mentioned.

CH. SP.—♂ *Similis præcedenti; lateribus capitis nigris, superciliis albis; gulâ albâ; pectore nigro alboque intermixto; alis albo bifasciatis.*

♂: Like the last species, excepting in the following points:—Throat white. Breast black, mixed with white. Sides of the head definitely pure black; edges of eyelids, and long, narrow superciliary line, white Wings crossed with two broad white bars, which, however, do not fuse into one white patch, owing to narrowness or deficiency of white edging along the outer webs of the great coverts. Size of the last.

The seasonal sexual changes of plumage, and those dependent upon age, are precisely parallel with those of *D. auduboni.*

A sketch of the literary vicissitudes which the Yellow-rumped Warbler has suffered may not unprofitably occupy some of the space which would otherwise be given up to an account of its habits, already familiar to most persons, especially as I am not aware that the intricate history of the matter has ever been fully brought out, though the bare names *coronata, canadensis, virginianus, umbria, pinguis, cincta, flavopygia,* and *xanthorhoa* are all currently and properly quoted in the present connection. We are too much in the habit of unconsciously supposing that when we have once "hunted down" a Latin binomial name we have got at the root of the matter; when, in fact, pinning a Gmelinian or even a Linnæan name, in many cases, should be but the preliminary to determining the actual basis of the species. Gmelin, in particular, was a turbid stream, generally several removes from the fountain-head; while Linnæus himself seems to have known comparatively little of birds other than of his own country, and his accounts are for the most part at second hand. In the cases of very many North American birds, known in the last century, the real authors of species were Catesby, Edwards, Brisson, Buffon, Latham, and Pennant, who are too often ignored, because they had the misfortune to write before 1766, or failed to accent the shibboleth of science; Linnæus was the original describer of very few of our birds, and Gmelin perhaps not of a single one. The state of the case is very well illustrated in the instance of *Dendræca coronata.* The synonymatic digest of the whole matter, as given above, looks singularly involved; but the bird is one of such marked characters that it is not difficult, exercising due care, to make it perfectly plain.

To begin with the *Motacilla coronata* Linn., which has come down to us through a chain of genera,—*Sylvia, Sylvicola, Mniotilta, Rhimanphus* or *Rhimamphus,* and *Dendroica* or *Dendræca:* This was based solely upon Edwards's plate 298 of the "Golden-crowned Flycatcher", which became Buffon's "Figuier couronné d'or", and the "Golden-crowned Warbler" of Pennant

and Latham, being also described meanwhile by Brisson (who, by the way, was one of the very best ornithologists of the last century) as the "Figuier cendré tacheté de Pensilvanie", otherwise *Ficedula pensilvanica cinerea nævia*. This set of names, therefore, go and all hang together upon Edwards's plate.

Linnæus again got hold of the Yellow-rump under the name and style of "Figuier cendré de Canada", *Ficedula canadensis cinerea*, originally described by Brisson from a specimen or specimens sent by Gautier from Canada to the Réaumur Museum. Brisson's description is very particular, as usual, and his bird is also figured. This plate and description are the basis of *Motacilla canadensis* Linn., species n. 27, p. 334. It is necessary to specify this page and number of Linnæus, for he has on p. 336, n. 42, *another Motacilla canadensis*, based on *Ficedula canadensis cinerea minor* of Brisson, iii. p. 527, pl. 27, f. 6; this last being altogether a different bird, namely, the Black-throated Blue Warbler, *Dendrœca canadensis* or *cærulescens* of modern authors.*

Linnæus, for the third time, brought up against the Yellow-rump in the shape of Catesby's *Parus uropygeo luteo*, Anglicè, Yellow-rumped Titmouse, figured on his plate 58; and this time he named it *Parus virginianus*, following Brisson, who, in 1760, described it very fully under the same name in Latin, and under the name of "Mésange de Virginie" in French. Brisson quotes Catesby, and also Klein,—the latter under the name I have above placed in quotation-marks, not having examined the book in this connection. At Buffon's hands, Catesby's bird became the *Mésange à croupion jaune*, a translation of Catesby's name; in Pennant's and Latham's works, it was rendered as the Virginian Titmouse, a simple version of Brisson's name. Gmelin simply kept up with the procession at this point, while poor Turton came straggling after. A little later, Vieillot, in the Oiseaux de l'Amérique Septentrionale, perceiving that the bird was no *Parus*, placed it in the genus *Sylvia;* but, as if to pay himself for his sagacity, presumed to change the *Parus virginianus* into *Sylvia flavopygia*, rendering "yellow rump" into such wretched bastard Latin that his commentators have generally quoted it *xanthopygia*. Vieillot himself seems to have become displeased with the name he had bestowed, for he changed it to *xanthorhoa* in 1817, in the Nouv. Dict., and to *xanthoroa* in the Encyclopédie Méthodique. This concludes a third set of names, traceable to Catesby's "Yellow-rump"; but before I have done with this part of the subject, I should account for the Yellow-rumped Warbler of Pennant and Latham. For, as must be particularly noted, the "Yellow-rump" of Pennant and Latham is a very different bird, to wit: the Yellow-rumped Flycatcher of Edwards's pl. 255; the

* Besides this double employ of *Motacilla canadensis* by Linnæus, Boddaert, in 1783, used the same term twice, in different connections, both different from Linnæus's use of the terms. On p. 4 of the Tableau, Boddaert names a *Motacilla canadensis*, basing it upon PE. 58, f. 2, which is *Dendrœca æstiva*. On p. 24 of the same work, Boddaert names another *Motacilla canadensis*, based primarily upon PE. 398, f. 2 (which is *Siurus auricapillus*), with some of the synonyms of *Dendrœca* added (*M. canadensis* Linn., sp. n. 27, and Edw. Gl. 252), Boddaert having evidently confounded the Golden-crowned Flycatcher of Edwards and the Golden-crowned Warbler of Pennant and Latham with the Golden-crowned Thrush of Edwards. Therefore:—

Motacilla canadensis Linn. (sp. 27) = *Dendrœca coronata*.

Motacilla canadensis Linn. (sp. 42) = *Dendrœca cærulescens*.

Motacilla canadensis Bodd. (p. 4—PE. 58, f. 2) = *Dendrœca æstiva*.

Motacilla canadensis Bodd. (p. 24—PE. 398, f. 2) = *Siurus auricapillus*, mixed with some synonyms of *Dendrœca coronata*.

Ficedula pensilvanica nævia of Brisson, iii. p. 502, n. 56; the "Figuier à tête cendrée" of Buffon; the *Dendrœca maculosa*, or Black-and-yellow Warbler, of modern authors.

A bird which is found in Linnæus is generally reproduced in Gmelin under the same name; but *Motacilla canadensis*, Linn. sp. 27, above fully explained, disappears with that single author—to be more precise, it reappears, but under a different title. For we find it again in the *Motacilla cincta* of Gmelin. Gmelin does not, indeed, quote *M. canadensis;* but he numbers his *cincta* "27", and bases it primarily on Brisson's pl. 27, f. 1. Now, Brisson, in describing the yellow spots which exist, one on each side of the breast of *D. coronata*, spoke of them as if they formed a band or belt across the breast,—"entre le ventre & la poitrine est une bande transversale jaune", says he; and out of this expression comes the "Figuier à ceinture" of the Count de Buffon, and the Belted Warbler of Latham and Pennant, *M. cincta* Gm. This fourth set of names are to be bundled together with the *Motacilla canadensis* Linn., sp. 27, and hung upon the peg of Brisson (iii. 524, pl. 27, f. 1).

Besides operating upon the three Linnæan names, *coronata*, *virginianus*, and *canadensis* (=*cincta*), we have discussed, Gmelin stumbled twice more upon the Yellow-rump, giving us our fifth and sixth Latin binomials, *umbria* and *pinguis*. In the Planches Enluminées, there is figured, at pl. 709, f. 1, a bird called on the plate "Fauvette tachetée de la Louisiane", and in Buffon's text "Fauvette ombrée de la Louisiane", which is recognized as a Yellow-rump at first glance; the same was called the "Dusky Warbler" by Pennant, and the "Umbrose Warbler" by Latham. This became Gmelin's *Motacilla umbria;* and all these names go with PE. 709, f. 1. For the sixth time (and, so far as I know, the last for the eighteenth century), the unhappy Yellow-rump comes upon the stage as *Motacilla pinguis*—the "Fat Warbler". This name is based upon the "Figuier grasset" of Buffon, rendered by Pennant and Latham as the "Grasset Warbler". There is no plate that I know of to refer to in this case, and the descriptions are not as satisfactory as could be wished; but there is no reasonable doubt of the species. For though Latham, for instance, describes the "throat and fore part of the neck pale rufous", yet the rest of his account is sufficiently pertinent, and the mention of "a spot of yellow on the head" and the "yellow rump" fixes the bird he had in view as the Yellow-rump in some obscure imperfect plumage in which the yellow on the sides of the breast was not present or not noticed. It is said to be from "Louisiana", a term which at that date, it will be remembered, covered most of the United States west of the Mississippi.

There is yet another representation of the Yellow-rump, as I take it, though not usually quoted in this connection. I refer to Pl. Enlum. 731, f. 2, called "Figuier du Mississipi" on the plate. This has been generally quoted, following Linnæus, Gmelin, and Latham, as pertaining to the Chestnut-sided Warbler (Quebec Warbler of Pennant and Latham), *M. icterocephala*, but the plate certainly resembles *D. coronata* more nearly, whatever may be said of the descriptions that go with it.

I trust that I have made it clear how the various specific names above cited—*coronata*, *canadensis*, *virginianus*, *cincta*, *umbria*, *pinguis*, and *flavopygia* or "*xanthopygia*", with *xanthorhoa* or "*xanthoroa*"—came to be applied to one and the same species; how *canadensis* No. 42 differs from *canadensis* No. 27 of Linnæus; and how the Yellow-rumped Flycatcher or Warbler of Edwards,

Latham, and Pennant differs from the Yellow-rump of authors; and have accounted for the large number of polynomial Latin, French, and English names that the same bird has received. The state of the case is nothing unusual; for though the number of names is perhaps in excess, yet this is offset by the possibility of determining them all. The reader may imagine how inextricable would have been the confusion had the bird been some plainly-marked species closely resembling several others.

WHAT little I have here to say of the Myrtle-bird relates chiefly to its extensive dispersion in the West beyond the recognized limits of the Eastern Province, of which the bird has been generally supposed characteristic. It is not remarkable that it should have been found in some cases on the Pacific side, seeing that it extends northwestward obliquely across British America into Alaska, where it breeds, and whence some individuals pass south, reaching Washington Territory and doubtless yet other regions along the Pacific side. The westward trend of the species in the United States may correspond nearly with the oblique lay of the Coteau de Missouri in Dakota; thus the birds are common at the proper season in the Red River Valley, and thence in the same watershed nearly across Dakota, along the parallel of 49°; but directly west of this, in the Missouri watershed, and even in that of the Saskatchewan, they are not known to occur; and in the Rocky Mountains at 49°, *D. audubóni* is the species, not *D. coronata*.

FIG. 35.—Yellow-rumped Warbler.

The common and regular occurrence of the Yellow-rump in the main chain of the Rocky Mountains is a fact of comparatively recent recognition, fully attested by such observers as Trippe, Aiken, and Henshaw. Thus, the first named of these ornithologists speaks in the "Birds of the Northwest" of the abundance of Myrtle-birds about Idaho and Colorado, where they appear during the latter part of April, go as high as 8,500 or 9,000 feet, and disappear about the 10th of May, passing north. Mr. Henshaw has recorded the capture of several specimens at Denver, Colorado, where in early May the birds were noticed with Audubon's Warblers, the two species associating so intimately that they were sometimes heard singing in the same tree.

I have in another bird-book noted the singular distribution of this species according to season, without special reference

to its geographical dispersion at large. It is a hardy bird, capable of enduring the rigors of winter almost everywhere in the United States; nevertheless, numbers press on to the south, reaching Central America along with the tenderest and most susceptible species of the family, while others are taking the weather as it comes in the Middle States, and even portions of New England. The breeding range is no less curious. Ordinarily, no Myrtle-birds nestle anywhere in the United States south of Northern New England; yet some at least of those that winter in the West Indies do not migrate at the vernal crisis of the year, but rear their young on the spot, as Mr. March has recorded from Jamaica, in the paper above cited.

For accounts of the general habits of this species, reference may be made to other treatises, as the necessary limits of the present work forbid me to be as full as I should like to be in the cases of those species which are scarcely entitled to any place in this volume.

Blackburnian Warbler

Dendrœca blackburniæ

? Figuier orangé, *Buff.* "v. 313".
? Figuier étranger, *Buff.* PE. 58, f. 3.
? Motacilla fusca, *Müll.* Syst. Nat. Suppl. 1776, 175 (from Buffon).
? Fauvette orangée, *V.* N. D. d'H. N. xi. 1817, 206; Ency. Méth. ii. 1823, 459.
? Motacilla aurantia, *Bodd.* Tabl. PE. 1783, 4 (PE. 58, f. 3) (*Figuier orangé* Buff. "v. 313"; *Figuier étranger*, name on PE. 58, f. 3).
? Mniotilta aurantia, *Gray*, G. of B. i. 1848, 196.
? Orange-headed Warbler, *Lath.* Syn. ii. pt. ii. 1783, 492, n. 119.
? Motacilla chrysocephala, *Gm.* SN. i. 1788, 971, n. 107 (Guiana) (based on the foregoing).
? Sylvia chrysocephala, *Lath.* IO. ii. 1790, 541, n. 124 (same as the foregoing).—*V.* N. D. d'H. N. xi. 1817, 206.—*Steph.* Gen. Zool. x. 1817, 700.—*V.* Ency. Méth. ii. 1823, 459, n. 143.
? Sylvicola chrysocephala, *Bp.* CA. i. 1850, 309.
? Grey-Poll Warbler, *Lath.* Syn. ii. pt. ii. 1783, 461, n. 66.—*Penn.* AZ. ii. 1785, 402, n. 291.
? Fauvette à tête grise, *V.* N. D. d'H. N. xi. 1817, 224; Ency. Méth. ii. 1823, 412.
? Motacilla incana, *Gm.* SN. i. 1788, 976, n. 125 (New York. *Grey-Poll Warbler* of Penn. and Lath.).—*Turt.* SN. i. 1806, 601.
? Sylvia incana, *Lath.* IO. ii. 1790, 527, n. 68.—*Vieill.* N. D. d'H. N. xi. 1817, 224.—*Steph.* Gen. Zool. x. 1817, 628.—*V.* Ency. Méth. ii. 1823, 442, n. 81.
? Mniotilta incana, *Gray*, G. of B. i. 1848, 196.
Motacilla blackburniæ, *Gm.* SN. i. 1788, 977, n. 127.—*Turt.* SN. i. 1806, 601.
Sylvia blackburniæ, *Lath.* IO. ii. 1790, 527, n. 70.—*V.* OAS. ii. 1807, 36, pl. 96.—*Wils.* AO. iii. 1811, 64, pl. 23, f. 3.—*Steph.* Gen. Zool. x. 1817, 627.—*V.* Ency. Méth. ii. 1823, 432, n. 43.—*Bp.* Journ. Phila. Acad. iv. 1824, 195.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 80.—*Nutt.* Man. i. 1832, 379.—*Aud.* OB. ii. 1834, 208; v. 1839, 73, pls. 135, 399.—*Peab.* Rep. Orn. Mass. 1839, 308.—*Thomps.* Vermont, 1853, 82.
Sylvia blackburni, *V.* N. D. d'H. N. xi. 1817, 168.
Sylvicola blackburniæ, *Jard.* "ed. Wils. 1832".—*Rich.* Rep. Brit. Assoc. for 1836, 1837, 172.—*Bp.* CGL. 1838, 22.—*Aud.* Syn. 1839, 57.—*Aud.* BA. ii. 1841, 48, pl. 87.—*Bp.* CA. i. 1850, 307.—*Hoy*, Pr. Phila. Acad. vi. 1853. 310.—*Read*, ibid. 398.—*Scl.* PZS. 1854, 111 (Quijos).—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Willis*, Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Albrecht*, J. f. O. 1861, 52 (Bahamas).—*Hoy*, Smiths. Rep. for 1864, 1865, 438 (Missouri).

Sylvicola blackburnia, *Pratten*, Tr. Ill. Agric. Soc. i. 1855, 602.
Mniotilta blackburniæ, *Gray*, G. of B. i. 1848, 196.
Rhimanphus blackburniæ, *Cab.* MH. i. 1850, 19.
Rhimamphus blackburniæ, *Scl.* PZS. 1855, 143 (Bogotá); 1858, 64 (Rio Napo).
Dendroica blackburniæ, *Bd.* BNA. 1853, 274.—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*Scl.* PZS. 1860, 84 (Ecuador).—*Scl.* PZS. 1860, — (Pallatanga).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, —.—*Verr.* Pr. Ess. Inst. iii. 1862, 147.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Allen*, Pr. Ess. Inst. iv. 1864, 62.—*Bd.* Rev. AB. 1865, 189.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe*, Am. Nat. ii. 1868, 179.—*v. Frantz.* J. f. O. 1869, 203 (Costa Rica).—*Turnb.* B. E. Pa. 1869, 24; Phila. ed. 17.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713.—*B. B. & R.* NAB. i. 1874, 237, pl. 13, f. 2, 3.
Dendrœca blackburniæ, *Scl.* PZS. 1859, 363 (Xalapa).—*Cab.* J. f. O. 1860, 328 (Costa Rica).—*Lawr.* Ann. Lyc. N. Y. vii. 1862, 468 (New Granada).—*Blak.* Ibis, 1863, 68 (Hudson's Bay).—*Dress.* Ibis, 2d ser. i. 1865, 478 (Texas).—*McIlwr.* Pr. Ess. Inst. v. 1866, 85.—*Salv.* PZS. 1867, 136 (Veragua).—*Lawr.* Ann. Lyc. N. Y. ix. 1866, 94 (Costa Rica).—*Coues*, Pr. Ess. Inst. v. 1868, 272.—*Coues*, Pr. Bost. Soc. xii. 1868, 110.—*Allen*, Am. Nat. iii. 1869, 577.—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 611.—*Cope*, Am. Nat. iv. 1870, 395, 396.—*S. & S.* PZS. 1870, — (Merida) —*Salv.* PZS. 1870, 183 (Veragua).—*Wyatt*, Ibis, 1871, 322 (Columba).—*Allen*, Am. Nat. vi. 1872, 265.—*Salv.* Ibis, 3d ser. ii. 1872, 314 (Chontales).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 363.—*Coues*, Key, 1872, 100.—*Allen*, Bull. MCZ. iii. 1872, 124, 166, 175 (Kansas and Utah).—*Trippe*, Pr. Bost. Soc. xv. 1873, 235.—*Coues*, BNW. 1874, 59.—*Gentry*, Life-Hist. i. 1876, 112.—*Minot*, B. N. Engl. 1877, 112.—*Merr.* Trans. Conn. Acad. iv. 1877, 16.————, Bull. Nutt. Club, iii. 1878, — (Fort Bayard, N. M.).
Sylvia parus, *Wils.* AO. v. 1812, 114, pl. 44, f. 3.—*Steph.* Gen. Zool. x. 1817, 727.—*V.* Ency. Méth. ii. 1823, 449, n. 106.—*Bp.* Journ. Phila. Acad. iv. 1824, 200.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 82.—*Nutt.* Man. i. 1832, 392.—*Aud.* OB. ii. 1834, 205, pl. 134.—*Peab.* Rep. Orn. Mass. 1839, 310.—*Thomps.* Vermont, 1853, App. 23.
Sylvicola parus, *Bp.* CGL. 1838, 22.—*Aud.* Syn. 1839, 55. –*Aud.* BA. ii. 1841. 40, pl. 83.—*Linsl.* Am. Journ. Sci. xliv. 1843, 257.—*Bp.* CA. i. 1850, 311.—*? ? Reinh.* J. f. O. 1854, 426 (Greenland).—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 590.—*Bry.* Pr. Bost. Soc. 1855, 142 (Massachusetts, in January).—*Putn.* Pr. Ess. Inst. i. 1856, 226.—*Wilkis*, Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Trippe*, Am. Nat. ii. 1868, 179.
Mniotilta parus, *Gray*, G. of B. i. 1848, 196.—*? ? Reinh.* Ibis, iii. 1861, 6 (Greenland).
Rhimamphus parus, *Bp.* CA. i. 1850, 311.
Sylvia melanorhoa, *Vieill.* Nouv. Dict. d'Hist. Nat. xi. 1817, 180 (Martinique); Ency. Méth. ii. 1823, 444, n. 88.
Mniotilta melanorhoa, *Gray*, G. of B. i. 1848, 197.
Blackburnian Warbler, *Penn.* AZ. ii. 1785, 412, n. 317.—*Lath.* Syn. ii. pt. ii. 1783, 461, n. 67.
Traquet Blackburn, *V.* l. c. 1807.
Fauvette Blackburn, *V.* l. c. 1823.
Fauvette à croupion noir, *V.* ll. cc. 1817 and 1823.
Fauvette Hemlock, *V.* l. c. 1823 (= *parus* Wilson).
Fauvette blackburnian, *V.* N. D. d'H. N. xi. 1817, 168.—*Le Moine*, Ois. Canad. 1861, 199.
Fauvette d'automne, *Le Moine*, Ois. Canad. 1861, 207 (= *parus* Aud.).
Hemlock Warbler, Orange-throated Warbler, *Authors.*

NOTE.—It may be worth while to look into the synonymy of the Blackburnian Warbler, part of it being very problematical. The earliest conjectured name of the bird is the "Figuier orangé" of Buffon, figured on Pl. Enlum. 53, f. 3, under the name of "Figuier étranger", and said to be from "Guiana". This is the sole basis of no less than three binomial names—*Motacilla fusca* Müller, 1776, *M. aurantia* Bodd., 1783, and *M. chrysocephala* Gm., 1788, and also became the "Orange-headed Warbler" of Latham. The Pl. Enlum. is not clearly referable to the present species, nor are the descriptions identifiable with certainty. Müller's runs as follows:— „55. Der Flügelfleck, Motacilla fusca. Sie ist oben braun, hat einen gelben Wirbel, und gelbe Augenringe. Die Brust ist roth, der Bauch gelb, und die Flügel sind mit einem weissen Flecken gezeichnet, Buffon." Latham says:— "Bill black: top and sides of the head, fore part and sides of the neck fine orange: over the eye a brown band; beneath the eye a second, but paler: the upper parts of the body and quills reddish brown: wing coverts black and white: breast and belly pale yellow: tail black, edged with pale yellow: legs yellow." These terms are so discordant with

the characters of *D. blackburniæ*, as to lead us to suppose that an entirely different bird may have been in view; and at any rate the names in question may be passed over. The Pl. Enlum., however, though not well colored, can hardly be anything else than the Blackburnian Warbler, and it may become necessary to call the species *Dendrœca aurantia*, after Boddaert, who distinctly bases the name on this plate, while Müller's earlier account simply refers to Buffon without specially indicating what bird of Buffon's is meant.

The next candidate for recognition in this connection is the "Grey-poll Warbler" of Pennant and of Latham, which became *Motacilla incana* Gm. Latham's description is:—"Head, sides of the neck, and upper tail coverts, of a fine grey: wing coverts crossed with two white bars: primaries and tail dusky, edged with grey: throat orange: chin and breast of a fine yellow: belly of a whitish ash-colour. Inhabits New York." This is much nearer the mark, and in fact agrees pretty well with some imperfect plumage of the present species; but as it is scarcely diagnostic (some points seem to indicate *Dendrœca maculosa*), it may also be passed over, in favor of the "Blackburnian Warbler" of the same authors, which became *Motacilla blackburniæ* Gm. This bird was likewise sent from "New York", and was named after Mrs. Blackburn.

The fifth name to be noticed is the "Hemlock Warbler", *Sylvia parus* of Wilson, Nuttall, Audubon, and others, from "Pennsylvania". This species endured for many years—in fact, until Baird in 1858 showed that it was a Blackburnian Warbler. One may be satisfied of the accuracy of this determination, by referring to Wilson's original description, which perfectly accords with the incomplete dress of *D. blackburniæ*. The reference by Audubon of the Autumnal Warbler, *Sylvia autumnalis*, to this species, is clearly an error.

In 1817, Vieillot gave a sixth name to the species, *Sylvia melanorhoa*, described from "Martinique" in the Nouv. Dict.; and in the Ency. Méth. the species reappears, along with the four previous designations, *chrysocephala*, *incana*, *blackburniæ*, and *parus*. The bird is here attributed to "L'Amérique méridionale", which removes the chief objection to the name, for the species is not known from the West Indian locality first ascribed; the description is tolerably pertinent, fitting about as well as that of Pennant and Latham's "Grey-poll Warbler" for example, and may be held, in absence of evidence to the contrary, to indicate some incomplete dress of the Blackburnian Warbler.

Stephens is said to have called this species *Sylvia lateralis*, in the x. vol. of his Cont. of Shaw's Gen. Zool., 1817, 659; but on turning to this place, I find that the "Sylvia lateralis" is there described after Latham, from "New South Wales", and does not agree in any particular with the characters of the present species.

The reference of the species to various genera, whereby additional synonyms are created, is a matter of course, requiring no comment.

HAB.—Chiefly the Eastern Province. West, however, to Utah (*Allen*) and New Mexico (*F. Stephens*). South in winter through Eastern Mexico and Central and South America to Ecuador. Bahamas (*Bryant*). Breeds in the northern portions of its United States range and northward in the British Provinces; doubtless, also, in elevated tracts of the Middle States. Winters extralimital. A *Sylvicola "parus"* is attributed to Greenland by Reinhardt, *l. c.* (Frederikshaab, Oct. 16, 1845, *Holböll*).

CH. SP.—♂ *Nigra, albido varia; vertice medio, strigâ superciliari, lateribus colli, gulâ et pectore flammeis; reliquis partibus inferioribus ex flavo albidis, lateribus nigro striatis; alis caudâque dorso concoloribus, illis speculo magno albo, rectricibus lateralibus magnâ ex parte albis.* ♀ *Suprà brunneo-olivacea, albido nigroque varia, gulâ aurantiacâ, alis albo bifasciatis.*

♂, adult, in spring: Entire upper parts, including the wings and tail, black, the back varied with whitish, the wings with a large white speculum on the coverts and much white edging of the coverts, the lateral tail-feathers largely white, only a shaft-line, with clubbed extremity, being left

blackish on the outer two or three pairs. Spot on fore part of crown, eyelids, line over eye spreading into a large spot behind the auriculars, with chin, throat, and fore breast, intense orange or flame color. Sides of head black in an irregular patch, usually confluent with the black streaks on the side of the breast, isolating the orange of the sides of the head from that of the throat, and circumscribing the orange patch below the eye. Under parts from the breast white, more or less tinged with orange or yellow, the whole sides streaked with black. Bill and feet dark. Length about 5¼; extent, 8½; wing, 2¾; tail, 2.

♀, adult, in spring: Similar to the male in the pattern and distribution of the colors; upper parts brownish-olive, streaked with black; the fiery orange of the male not so intense, or merely yellow, that on the crown obscure or obsolete. White speculum of the wing resolved into two white bars. Sides of the head like the back, instead of black as in the male, and the lateral streaks duller and more blended.

♂ and ♀, adult, in autumn, are sufficiently similar to the respective sexes in spring, but the coloration is toned down, the fiery colors of the male being less intense, and the black of the back being much mixed with olivaceous, bringing about a close resemblance to the spring female; while the female is duller still, and more impurely colored.

Young: Early autumnal birds of the year of this species are very obscure looking, showing no sign of the rich coloration of the adults. Above, like the adult ♀, but still browner, with more obsolete dusky streaking. Usually indication of the crown spot in a lightening of the part. Sides of the head like the crown, cutting off a superciliary stripe and the eyelids, which are ochrey white. Whole under parts white, tinged, especially on the throat and breast, with yellowish, the sides with obsolete streaking. Indication of the peculiar pattern of the adults, though without their actual coloration, together with the extent of white on the tail-feathers, will usually suffice for the determination of the species, before any orange appears on the throat, after which there can be no difficulty.

A POINT of special interest in the present connection is the authentic record furnished by Allen of the occurrence of the Blackburnian Warbler in Utah, where a few specimens were secured in the spring of 1871, as he has recorded in the valuable paper above cited. This is, with one exception, the westernmost advice we have of the Blackburnian Warbler, previously supposed to be confined strictly to the Eastern Province, and one which brings the bird fairly into our present geographical perspective; but just as these pages go to press, I learn from advance sheets of a forthcoming number of the Bulletin of the Nuttall Ornithological Club, that the Blackburnian Warbler has been found at Fort Bayard, New Mexico. It is a well-known and abundant species, into the natural history of which I do not propose to enter here.

Black-poll Warbler

Dendrœca striata

Muscicapa striata, *Forst.* Philos. Trans. lxii. 1772, 406, 428, n. 31 (Severn River).—*Gm.* S. N. i. 1788, 930, n. 7 (from Forster; quotes also *Müll.* Ill. pl. 15, A. B.).—*Lath.* IO. ii. 1790, 481, n. 56 (from Forster; quotes also *Striped Flycatcher, Penn.* A. Z. ii. 390, and *Lath.* Syn. ii. pt. i. 349).—*Turt.* SN. i. 1806, 571.—*Steph.* Gen. Zool. x. 1817, 370.

Motacilla striata, *Gm.* SN. i. 1788, 976, n. 124 (*Black-poll Warbler,* Penn. & Lath.).—*Turt.* SN. i. 1806, 600.

Sylvia striata, *Lath.* IO. ii. 1790, 527, n. 67.—*V.* OAS. ii. 1807, 22, pls. 75, 76.—*Wils.* AO. iv. 1811, 40, pl. 30, f. 3; vi. 1812, 101, pl. 54, f. 3.—*Steph.* Gen. Zool. x. 1817, 645.—*V.* N. D. d'H. N. xi. 1817, 219 and 222.—*V.* Ency. Méth. ii. 1823, 441, n. 77, and 464, n. 167.—*Bp.* Journ. Phila. Acad. iv. 1824, 199.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 81.—*Nutt.* Man. i. 1832, 383.—*Aud.* OB. ii. 1834, 201, pl. 133.—*Peab.* Rep. Orn. Mass. 1839, 309.—*Thomps.* Vermont, 1853, App. 22.

Sylvicola striata, *S. & R.* FBA. ii. 1831, 218.—*Bp.* CGL. 1838, 22.—*Aud.* Syn. 1839, 53.—*Aud.* BA. ii. 1841, 28, pl. 78.—*Ep.* CA. i. 1850, 308.—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Hoy,* Pr. Phila. Acad. vi. 1853, 311.—*Read,* ibid. 399.—*Reinh.* J. f. O. 1854, 427 (Greenland).—*Henry,* Pr. Phila. Acad. vii. 1855, 309.—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Pratten,* ibid. 601.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Bry.* Pr. Bost. Soc. vi. 1857, 116 (Nova Scotia).—*Maxim.* J. f. O. 1858, 113.—*Wilkis,* Smiths. Rep. for 1858, 1859, 282.—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Albrecht,* J. f. O. 1861, 52 (Bahamas).—*Hoy,* Smiths. Rep. for 1864, 1865, 438 (Missouri).

Mniotilta striata, *Gray,* G. of B. i. 1848, 196.—*Cabot,* Naum. ii. Heft iii. 1852, 66.—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Reinh.* Ibis, iii. 1861, 6 (Greenland).

Rhimanphus striatus, *Cab.* MH. i. 1850, 20.

Rhimamphus striatus, *Scl.* PZS. 1855, 143 (Bogotá).—*Gundl.* J. f. O. 1855, 475 (Cuba).—*Gundl.* J. f. O. 1861, 409 (Cuba).

Dendroica striata, *Bd.* BNA. 1858, 280.—*Henry,* Pr. Phila. Acad. xi. 1859, 106.—*Coues,* Pr. Phila. Acad. 1861, 220 (Labrador).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Blak.* Ibis, iv. 1862, 4 (Saskatchewan).—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 161.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 408.—*Verr.* Pr. Ess. Inst. iii. 1862, 147.—*Allen,* Pr. Ess. Inst. iv. 1864, 63.—*Bd.* Rev. AB. 1865, 192.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Brew.* Am. Nat. i. 1867, 120.—*Trippe,* Am. Nat. ii. 1869, 179.—*Turnb.* B. E. Pa. 1869, 25; Phila. ed. 18.—*Dall & Bann.* Tr. Chicago Acad. i. 1869, 278 (Alaska).—*Dall,* Am. Nat. iv. 1870, 600 (Alaska).—*Gundl.* J. f. O. 1872, 414 (Cuba).—*Brew.* Pr. Bost. Soc. xiv. 1872, 439.—*Packard,* Am. Nat. viii. 1874, 271.—*Hensh.* Rep. Orn. Specs. 1874, 59 (Colorado).—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 198 (same).

Dendroica striatus, *Gundl.* J. f. O. 1861, 326 (Cuba).

Dendrœca striata, *Blak.* Ibis, v. 1863, 62.—*McIlwr.* Pr. Ess. Inst. v. 1866, 86.—*Coues,* Pr. Ess. Inst. v. 1868, 273.—*Sund.* Oefv. K. Vet.-Akad. Förh. 1869, 614.—*S. & S.* PZS. 1870, 780 (Merida).—*Trippe,* Am. Nat. vi. 1872, 48.—*Coues,* Key, 1872, 100, f. 42, pl. 2, f. 15, 16.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 366.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235.—*Snow,* Am. Nat. viii. 1874, 757.—*Coues,* BNW. 1874, 60.—*B. B. & R.* NAB. i. 1874, 248, pl. 13, f. 9.—*Gentry,* Life-Hist. i. 1876, 114.—*Minot,* B. N. Engl. 1877, 110.—*Merr.* Trans. Conn. Acad. iv. 1877, 16.

Dendroica pinus [err. !], *Coues,* Pr. Phila. Acad. 1861, 220 (Labrador).

Dendrœca atricapilla, *Landb.* "Arch. f. Naturg. 1864, 56 (Chile)."—*Scl.* PZS. 1867, 337 (Chile).

Striped Flycatcher, *Forst.* l. c.—*Lath.* Syn. ii. pt. i. 1783, 349, n. 46.—*Penn.* A Z. ii. 1785, 390, n. 277.

Black-poll Warbler, *Lath.* Syn. ii. pt. ii. 1783, 460, n. 65.—*Penn.* A Z. ii. 1785, 401, n. 290.

Fauvette striée, Fauvette tailor, *V.* N. D. d'H. N. xi. 1817, 219 and 222; and Ency. Méth. ii. 1823, 464 and 441.

Fauvette rayée, *Le Moine,* Ois. Canad. 1861, 189.

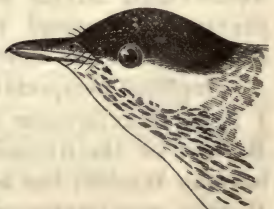

FIG. 36.—Black-poll Warbler.

NOTE.—This bird was first described in 1772 by Forster as the "Striped Flycatcher", *Muscicapa striata.* Next it was described as a separate species, the "Black-poll Warbler", by Pennant and Latham, their bird becoming *Motacilla striata* of Gmelin, it being

a mere coincidence that the same specific name, *striata*, was bestowed upon the two birds, supposed to belong to different genera, but which are the same species. Vieillot very curiously retains both under the genus *Sylvia*, in the Nouv. Dict. 1817, and the Ency. Méth. 1823, having in each of these works a *Sylvia striata* in two places, though one he calls in French "Fauvette striée", and the other "Fauvette tailor". Even in Gray, G. of B. 1848, the name *striata* is similarly duplicated under *Mniotilta*.

HAB.—North America, excepting the Western and most of the Middle Province. North to the Arctic Ocean and Greenland. Northwest to Alaska, in the Yukon region. West to Nebraska and Colorado. South to New Granada and perhaps to Chili (*cf. D. atricapilla, l. s. c.*). Cuba and Bahamas only of the West Indies. No Mexican quotations. Breeds from Northern New England northward. Winters beyond the United States. Migrates late in the spring, bringing up the rear-guard of the Warbler hosts.

CH. SP.— ♂ *Olivacea, nigro striata, pileo nigro; infrà alba, lateraliter nigro striata à rostro ad caudam; alis fuscis, albo bifasciatis, caudâ fuscâ, rectricibus lateralibus albo notatis; pedibus pallidis.* ♀ *suprà virescens, undique nigro striata; infrà virenti-albida, fusco striata.*

♂, adult: Back, rump, and upper tail-coverts grayish-olive, heavily streaked with black; whole crown pure glossy black. Below pure white; a double series of black streaks starts from the extreme chin, and diverges to pass one on each side to the tail, the streaks being confluent anteriorly, discrete posteriorly. Side of head above the chain of streaks pure white, including lower eyelid. Wings dusky, the primaries with much greenish edging, the inner secondaries with whitish edging, the greater and median coverts tipped with white, forming two cross-bars. Tail like the wings, with rather small white spots at the ends of the inner webs of two or three outer feathers. Upper mandible brownish-black; lower mandible with the feet flesh-colored or yellowish. Length, 5¼–5¾; extent, 9–9½; wing, 2¾–2⅞; tail, 2¼.

♀: Entire upper parts, including the crown, greenish-olive, with dusky streaks; below white, much tinged with greenish-yellow, especially anteriorly, the streaks dusky and not so sharp as those of the male, but still very evident. Bars and edgings of the wings greenish-white. Tail as in the male. Rather smaller than the male on an average.

Young: Similar to the adult ♀, but brighter and more greenish-olive above, the streakings few and chiefly confined to the middle of the back; below more or less completely tinged with greenish-yellow, the streaking obsolete, or entirely wanting. Under tail-coverts usually pure white. These autumnal birds bear an extraordinary resemblance to those of *D. castanea* (though the adults are so very different), the upper parts being, in fact, the same in both. But young *castanea* generally shows traces of the chestnut, or at least a buffy shade, quite different from the clear greenish-olive of *striata*, this tint being strongest on the flanks and under tail-coverts, just where *striata* is the most purely white. Moreover, *castanea* shows no streaks below, traces at least of which are usually observable in *striata*.

The still earlier plumage of the bird when just from the nest is different again, for this species, like many other *Sylvicolidæ*, *Turdidæ*, &c., has at first a transient streaky or speckled plumage. In this condition, the upper parts are grayish, the lower white, the whole body marked with blackish in the form of a terminal spot or bar on each feather.

DURING the vernal migrations, vast numbers of the Black-polls enter the United States from their winter home in South America, sometimes as early as February, and pass leisurely northward till some of them gain the uttermost Arctic regions, while others, presumably later comers, are advised by the progress of the season to nestle even short of the northern border of our country. None are known as yet to come from Mexico—a circumstance long favoring the general impression that the species was a thoroughly Eastern one. Nevertheless, we have ascertained that some of these birds advance west of the Plains, along the eastern base of the Rocky Mountains, for they have been found in May near Denver, Colorado, by Mr. H. W. Henshaw, hovering about the rather debatable border-land of the "Birds of the Colorado Valley".

Black-and-yellow Warbler

Dendrœca maculosa

Motacilla maculosa, *Gm.* SN. i. 1788, 984, n. 151 (Briss. iii. 502, n. 56; Penn. ii. 400, n. 288).—*Turt.* SN. i. 1806, 606.

Sylvia maculosa, *Lath.* IO. ii. 1790, 536, n. 108.—*V.* OAS. ii. 1807, 33, pl. 93.—*V.* N. D. d'H. N. xi. 1817, 223.—*Steph.* Gen. Zool. x. 1817, 715.—*V.* Ency. Méth. ii. 1823, 427, n. 29.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 78.—*Aud.* OB. i. 1831, 260; ii. 1834, 145; v. 1839, 458; pls. 50, 123.—*Nutt.* Man. i. 1832, 370.—*Peab.* Rep. Orn. Mass. 1839, 308.—*D'Orb.* Ois. Cuba, 1839, 72.—*Thomps.* Vermont, 1853, 81.—*Haym.* Pr. Phila. Acad. viii. 1856, 290.

Sylvicola maculosa, *S. & R.* FBA. ii. 1831, 213, pl. 40.—*Bp.* CGL. 1838, 22.—*Aud.* Syn. 1839, 61.—*Aud.* BA. ii. 1841, 65, pl. 96.—*Denny,* PZS. 1847, 38.—*Bp.* CA. i. 1850, 307.—*Hoy,* Pr. Phila. Acad. vi. 1853, 310.—*Read,* ibid. 398.—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Pratten,* ibid. 602.—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Willis,* Smiths. Rep. for 1858, 1859, 282.—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Albrecht,* J. f. O. 1861, 53 (Bahamas).—*Hoy,* Smiths. Rep. for 1864, 1865, 438.

Mniotilta maculosa, *Gray,* G. of B. i. 1848, 196.—*Cabot,* Naum. ii. Heft iii. 1852, 66.—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.

Rhimanphus maculosus, *Cab.* MH. i. 1850, 20.

Rhimamphus maculosus, *Gundl.* J. f. O. 1855, 474 (Cuba).

Dendroica maculosa, *Bd.* BNA. 1858, 284.—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 408.—*Verr.* Pr. Bost. Soc. ix. 1862, 147 (Anticosti).—*Allen,* Pr. Ess. Inst. iv. 1864, 63.—*Bd.* Rev. AB. 1865, 206.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe,* Am. Nat. ii. 1868, 180.—*Scl.* PZS. 1869, 374 (Oaxaca).—*Turnb.* B. E. Pa. 1869, 25; Phila. ed. 18.—*Gundl.* J. f. O. 1872, 415 (Cuba).—*Packard,* Am. Nat. viii. 1874, 271.—*B. B. & R.* NAB. i. 1874, 232, pl. 14, f. 2.—*Hensh.* Rep. Orn. Specs. 1874, 58 (Denver, Colo.).—*Brew.* Pr. Bost. Soc. xvii. 1875, 439.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 196 (Denver, Colo.).

Dendrœca maculosa, *Scl.* PZS. 1859, 363 (Xalapa).—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 322 (New Granada).—*Scl.* PZS. 1862, 19 (Southern Mexico).—*Blak.* Ibis, v. 1863, 63 (British America).—*Verr.* Pr. Bost. Soc. ix. 1863, 234.—*S. & S.* PZS. 1864, 347 (Panama).—*Dress.* Ibis, 2d ser. i. 1865, 478 (Texas).—*McIlwr.* Pr. Ess. Inst. v. 1866, 86.—*Coues,* Pr. Ess. Inst. v. 1868, 273.—*Coues,* Pr. Bost. Soc. xii. 1868, 110.—*Sund.* Oefv. K. Vet.-Akad. Förh. 1869, 615.—*Cope,* Am. Nat. iv. 1870, 395, 396, 399.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 367 (Maine, breeding).—*Mayn.* B. Fla. 1873, 56.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235.—*Snow,* Am. Nat. viii. 1874, 757.—*Coues,* BNW. 1874, 62.—*Gentry,* Life-Hist. i. 1876, 123.—*Minot,* B. N. Engl. 1877, 126.—*Merr.* Trans. Conn. Acad. iv. 1877, 17.—*Brewst.* Bull. Nuttall Club, ii. 1877, 1 (full biography).

Sylvia magnolia, *Wils.* AO. iii. 1811, 63, pl. 23.—*Steph.* Gen. Zool. x. 1817, 604.—*Bp.* Journ. Phila. Acad. iv. 1824, 194.

Yellow-rumped Flycatcher, *Edw.* pl. 255.

Figuier à tête cendrée, *Buff.* "Ois. v. 291".

Figuier tacheté de Pensilvanie, Ficedula pensilvanica nævia, *Briss.* Orn. iii. 502, n. 56 (quotes Edw. pl. 255).

Yellow-rumped Warbler, *Lath.* Syn. ii. pt. ii. 1783, 481, n. 104.

Yellow-rump Warbler, *Penn.* AZ. ii. 400, n. 288 (a basis of *M. maculosa* Gm.; not to be confounded with *Yellow-rump* of modern writers, which is *D. coronata*).—*Sw. & Rich.* FBA. l. c.

Fauvette à tête cendrée, *V.* N. D. d'H. N. xi. 1817 223; Ency. Méth. ii. 1823, 427.

Spotted Warbler, *Peab.* l. c.—*Nutt.* l. c.

Bec-fin à tête cendrée, *D'Orb.* l. c.

Black-and-yellow Warbler, *Authors.*

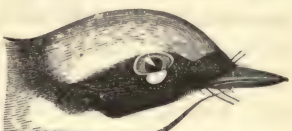

FIG. 37.—Black-and-yellow Warbler.

HAB.—Eastern Province of North America. North to Labrador, Hudson's Bay, Great Slave Lake, &c. South through Eastern Mexico and Central America to New Granada. West to the Rocky Mountains of Colorado. Cuba and the Bahamas. Breeds from New England northward, and probably farther south in elevated portions of the United States. Winters extralimital.

CH. SP.— ♂ ♀ *Dorso nigro, plus minusve olivaceo tincto; uropygio flavo; vertice cinereo; lateribus capitis cum fronte angustissimè nigris, palpebris et strigâ postoculari albis; gastræo flavo, crisso albo, pectore lateribusque nigro striatis; alis caudâque nigricantibus, illis speculo albo, rectricibus maculis albis quadratis.*

♂ ♀, in spring: Back black, usually quite pure and uninterrupted in the ♂, more or less mixed with olive in the ♀; rump yellow; upper tail-coverts black, often skirted with olive or ashy. Whole crown of head clear ash; sides of head black, including a very narrow frontlet; the eyelids and a stripe behind the eye, between the ash and black, white. Entire under parts rich yellow, excepting the white crissum, heavily streaked with black across the breast and along the sides, the streaks on the breast so thick as to form a nearly continuous black border to the immaculate yellow throat. Wings fuscous, with white lining, white edging of the inner webs of all the quills, of the outer webs of the inner secondaries, and with a large white patch formed by the tips of the median coverts and tips and outer edges of the greater coverts. Tail blackish, with square white spots on the middle of the inner webs of all the feathers excepting the middle pair. Bill blackish; feet dark. Length, 4¾–5; extent, 7–7½; wing, 2¼–2½; tail, 2–2¼.

Young: Upper parts ashy-olive, becoming grayer on the head; rump as yellow as in the adult. No decided head-markings; a whitish ring round the eye. Below yellow, generally continuous, but sometimes incomplete, being partially replaced by gray; black streaks wanting or few, and confined chiefly to the sides. Wings with two whitish bars. Tail-spots as in the adult.

While the sexes of the adult of this beautiful species are quite similar, differing mainly in the less extent and purity of the black on the back, the young are quite different; but may always be recognized by the yellow rump, in connection with the extensively or completely yellow under parts, and small, square, white tail-spots remote from the ends of the feathers.

WITH the name of this pretty species, the list of Eastern-Province Warblers which reach westward to the confines of the Colorado Basin closes. The bird was not long since added to the fauna of Kansas by Prof. F. H. Snow, who has been foremost in filling out the recognized category of the birds of that State; and about the same time, Mr. H. W. Henshaw found the Black-and-yellow Warbler near Denver, Colorado, where, on the 17th of May, 1873, he picked a male in full plumage out of a flock of Audubon's Warblers, in the company of which it was migrating. The occurrence may have been wholly fortuitous, as Mr. Henshaw has surmised; but we have learned of the appearance of so many Eastern birds along the foot-hills of the Rocky Mountains of Colorado, that we should be slow to deny that the present species may not pass that way regularly each year.

Grace's Warbler

Dendrœca graciæ

a. graciæ

Dendroica graciæ, *Coues*, MSS.—*Bd.* Rev. AB. 1865, 210 (Fort Whipple, Ariz.).—*Coop.* B. Cal. i. 1870, 563, fig.—*Ridgw.* Am. Nat. vii. 1873, 608.—*B. B. & R.* NAB. i. 1874, 243, pl. 14, f. 10.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 197.

Dendrœca graciæ, *Coues*, Pr. Phila. Acad. xviii. 1866, 67.—*Sund.* Oefv. K. Vet.-Akad. Förh. 1869, 611.—*Coop.* Am. Nat. iii. 1869, 479.—*Coues*, Key, 1872, 103.—*? Salv.* Ibis, iii. 3d ser. 1873, 428 (Guatemala—*decora ?*).

Dendræca graciæ, *Elliot*, Illust. BNA. i. pl. vi.

Mniotilta graciæ, *Giebel*, Nomencl. Av. 1873, 603.

b. decora

Dendroica graciæ *var.* **decora,** *Ridgw.* Am. Nat. vii. 1873, 608.—*B. B. & R.* NAB. i. 1874, 220.

CH. SP.—♂ ♀ *Cæruleo-cinerea, dorso et vertice nigro notatis, loris nigris, superciliis et macula suboculari, cum gulâ et pectore, flavis; abdomine crissoque albis, lateribus corporis et colli nigro striatis; alis albo bifasciatis, rectricibus lateralibus magnâ ex parte albis; rostro pedibusque nigris.*

♂, adult: Entire upper parts ashy-gray, with a slaty-blue tinge; the middle of the back streaked with black, the upper tail-coverts less conspicuously so marked; the crown with crowded black arrow-heads, especially anteriorly and laterally, the tendency of these markings being to form a line along the side of the crown, meeting its fellow on the forehead. A broad superciliary line of yellow, confluent with its fellow on the extreme front, changing to white behind the eye. Lores blackish; sides of head otherwise like the back, enclosing a crescentic yellow spot below the eye; edges of eyelids yellow. Chin, throat, and fore breast bright yellow, bordered with blackish streaks; the yellow of the throat separate from that under the eye or on the lores. Under parts from the breast white, the sides shaded with

the color of the back, and streaked with black in continuation of the chain of shorter streaks along the side of the neck. Wings dusky, with very narrow whitish edging, and crossed with two white bars along the ends of the greater and median coverts. Tail like the wings; the lateral feather mostly white, excepting the outer web; the next two or three with white blotches, decreasing in size. Eyes, bill, and feet black; soles dirty yellowish. Length, $4\frac{9}{10}$–$5\frac{1}{4}$; extent about 8; wing, $2\frac{3}{8}$; tail, $2\frac{1}{4}$.

♂, in autumn: Color of the upper parts obscured with a shade of brownish-olive, the dorsal streaks obscure. The head-markings as in summer, and the yellow parts quite as bright.

♀: Quite similar to the male, and in fact scarcely distinguishable from the male in autumn, though the yellow is not quite so strong.

Young: The slate-gray of the upper parts much shaded with brownish-olive, the black streaks wanting on the back, those on the crown obsolete. Yellow much as in the adult but paler, and not bordered along the sides of the neck with black streaks. The black lores are poorly defined. The wing-bars are grayish or obsolete. The white of the under parts has an ochrey tinge, and the lateral streaks are not so heavy in color nor so well defined.

Since this species was originally described, a slight variety (*decora*) has been noted from Honduras, in which the superciliary stripe is wholly yellow and does not pass beyond the eye, and there are some other slight characters. Among United States species, the present is most like *D. dominica*, but this is much larger, with a much longer and stouter bill, the long white superciliary line prolonged to the side of the neck, where it enlarges into a spot, and the sides of the head and neck broadly black, isolating the white lower eyelid, and otherwise different.

GRACE'S Warbler is to me a bird of particular and not unpardonable interest, being the only species of this beautiful genus that it has fallen to my lot to discover, and bearing the name of one for whom my affection and respect keep pace with my appreciation of true loveliness of character.

It is one of the latest additions to the long and varied list of Wood-Warblers, and the only species with which the genus has been enriched during the last ten or twelve years—a near relative of Adelaide's Warbler* from Porto Rico, described at the same time by Professor Baird, and next most closely related to the very old species now usually called *Dendrœca dominica*.

In my original notice of this bird, I referred to certain specimens collected by Mr. C. Wood, at Belize, British Honduras,

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* A near relative of *D. graciæ* is the following Porto Rican species, described at the same time by Baird:—

Dendrœca adelaidæ.

Dendroica adelaidæ, *Bd.* Rev. AB. 1865, 212.
Mniotilta adelaidæ, *Gray*, Handlist, i. 1869, 241, n. 3500.
Dendroeca adelaidæ, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 615.
Dendroica graciæ *var.* **adelaidæ**, *B. B. & R.* NAB. i. 1874, 220.
Mniotilta adelaidæ, *Giebel*, Nomencl. Av. 1875, 599.

where it was said to be common. These specimens, however, were afterward described as representing a different variety, to which the name *decora* was applied by Mr. Robert Ridgway.

While journeying through New Mexico, *en route* to Fort Whipple, Arizona, in July, 1864, I found Grace's Warbler on the summit of Whipple's Pass of the Rocky Mountains, not far from the old site of Fort Wingate, and secured the first specimen on the second of the month just named. I saw no more of the bird—though it certainly must live in the pine-clad San Francisco Mountains which I traversed—till the following spring, when I ascertained that it was the most abundant bird of its kind, excepting Audubon's Warbler, in the pineries in the midst of which Fort Whipple is located. I have not yet learned of its occurrence anywhere beyond New Mexico and Arizona, nor indeed outside of the pine belt that indicates a certain elevation of the surface in these Territories; but as it is a migratory bird, and has never been found in the United States in winter, there is no doubt that it retires to Mexico in the fall, to return in the spring. The extent of its movements, however, remains to be ascertained. I secured a fine large suite of specimens at Fort Whipple, illustrating the variations of the plumage under the different conditions of sex, age, and season, and latterly my friend Henshaw has taken many more. His were all procured in the White Mountains of Arizona, at and near Camp Apache, excepting one which he took at Inscription Rock, New Mexico, which is within an easy day's march of the spot where my original specimen was procured. During two seasons he found it to be one of the commonest of the summer Warblers in the White Mountains, where the young birds just from the nest were observed during the second week in July. His observations confirm my own in regard to the pine-loving character of the birds; he found them almost invariably in coniferous forests, passing swiftly along the smaller branches of these tall trees, or darting into the air to capture passing insects; and even in August, when various families had united into small flocks, and were lingering in company with other insectivorous birds, before their departure for the South, their preference for their native pines was still evident.

In the spring of 1865, I noted the arrival of these Warblers in the vicinity of Fort Whipple on the 20th of April, and they continually fell under my observation from this date until the third week in September, about which time I suppose they left

for the South. They pair off very soon after their arrival, by the beginning of May, and I think they must, in some cases at least, rear two broods during the summer, as I found newly fledged birds during the middle of August. I never discovered their nest, but have no doubt it will be found high up in the pine-trees, to which the birds are so much attached. They keep not only among tall pines, but even in the upper portions of these magnificent trees, some of which grow to such height that it is a fair gunshot range to their lower limbs, let alone the canopy of foliage that stretches to the sunlight out of the lower shade it casts itself, affording the happiest hunting-ground to these nimble and industrious birds. They are seen coursing among the branchlets, skipping at apparent random through the endless intricacies of the foliage, hovering momentarily about the terminal bunches of needles, and then dashing far out into clear space, to capture the passing insect with a dexterous twist and turn. So the season passes, till the young are on wing, when the different families, still with bonds unbroken, ramble at leisure through the woods, the young birds timid and feeble at first, venturing shorter flights than their parents, who seem absorbed in solicitude for their welfare, and attend them most sedulously, till they are quite able to shift for themselves. They are quick to learn; it is not long before, gaining full confidence, they loose their family ties; different broods meet in undistinguished companies, and all go trooping down the mountain-sides, or off to the southward, when first the pine-trees sigh and whisper to each other that they hear the threatening murmur of oncoming storms.

During the whole summer, these Warblers have no other note than that thin and wiry chirping which so many species of this group utter. Earlier in the season, when the males would seek their fates, they sing right heartily, and with a strength and clearness one would scarce expect to hear from musicians of such puny size. The song opens with two or three slurred, whistling notes, continued for a few moments with a clear, thin chirrup that I know not how to express in words. They have also another song, which always reminded me of that which is so constantly heard from the Redstart during the same climacteric period of its life.

I await with impatience the discovery of the nest and eggs of my sister's Warbler, and the determination of its winter home, that the history of the pretty bird may be completed.

The only species of *Dendrœca* not taken into account in the foregoing pages are the two following:—

Dendrœca pharetra.

Sylvicola pharetra, *Gosse,* B. Jam. 1847, 163.—*Gosse,* Illust. B. Jam. 1848, pl. 38.—*Bp.* CA. i. 1850, 309.—*Osburn,* "Zoologist, p. 6660".
Mniotilta pharetra, *Gray,* G. of B. i. 1848, 196.—*Giebel,* Nomencl. Av. 1875, 605.
Dendrœca pharetra, *Scl.* PZS. i. 1861, 71.—*Scl.* Cat. AB. 1862, 358.—*Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 617.
Dendroica pharetra, *Bd.* Rev. AB. 1865, 192.—*B. B. & R.* NAB. i. 1874, 220.

HAB.—Jamaica.

Dendrœca pityophila.

Sylvicola pityophila, *Gundl.* Ann. Lyc. N. Y. vi. Oct. 1855, 160.
Rhimamphus pityophilus, *Gundl.* J. f. O. 1857, 240.
Dendroica pityophila, *Bd.* Rev. AB. 1865, 208.—*B. B. & R.* NAB. i. 1874, 221.
Dendrœca pityophila, *Sund.* Oefv. K. Vet.-Akad. Förh. iii. 1869, 612.
Mniotilta pityophila, *Gray,* Handlist, i. 1869, 241, n. 3199.—*Giebel,* Nomencl. Av. 1875, 606.

HAB.—Cuba.

Genus SIURUS Swainson

Seiürus, *Sw.* Zool. Journ. iii. 1827, 171. (Type *Motacilla aurocapilla* L.)
Siurus, *Strickl.* "Syn. 1841, —".—*Coues,* Bull. Nutt. Club, ii. 1877, 29 (nomenclature).
Sejurus, Sciurus, Senurus, Seuirus, *cf Some.*
Enicocichla, *Gray,* "1840"; List G. of B, 1841, 31.
Henicocichla, "*Agass.*"—*Cab.* M. H. i. 1850, 15.
Exochocichla, *Van der Hoev.* "Zool. 1856".

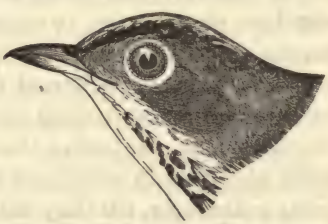

FIG. 38.—Golden-crowned Accentor.

CHARS.—In general form, scarcely distinguishable from *Dendrœca;* larger in size, different in pattern of coloration, in habits, gait, and nidification. Bill ordinary. Rictal bristles short but evident. Wings pointed, much longer than tail. Tarsus longer than middle toe and claw. Tail nearly even, with rather acute feathers, and long, copious under coverts. Size larger than in *Dendrœca.* Neither wings nor tail particolored. Above olivaceous, with or without head-markings, otherwise uniform; below white, buffy, or yellowish, profusely streaked. Legs slender, pale-colored. Habits terrestrial to some extent; nest on the ground; eggs white, spotted. Vocal powers preëminent. Gait ambulatorial, not saltatorial, and some other traits decidedly Motacilline.

This genus has held its position in the system by very uncertain tenure, having been referred to various families, as the *Turdidæ, Motacillidæ,* and *Sylvicolidæ.* It is difficult to see how it differs in any important particular of structure from such a Sylvicoline genus as *Dendrœca* for instance, and it seems much better located here than among the Wagtails, notwithstanding the fact that it resembles these birds in many points of its econ-

omy. The number of primaries (nine) excludes it from the *Turdidæ*. The genus is probably definable by the characters I have given, and I continue to endorse Baird's reference of it to the *Sylvicolidæ*, considering it to be a terrestrial type of Warbler.

The original name of the genus, written *Seiürus* by Swainson, rendered *Sejurus* by some and amended as *Siurus* by others, has been discarded by some on account of its identity in sound, though not in orthography or etymology, with *Sciurus*, a mammalian genus. But I see no necessity for this. There are only three well-determined species, all of them North American, and two of them occurring in the Colorado Basin.

Golden-crowned Accentor

Siurus auricapillus

Motacilla aurocapilla, *L.* SN. i. 1766, 334, n. 29 (Briss. iii. 504; Edw. 91, pl. 252).—*Gm.* SN. i. 1788, 982, n. 29.—*Turt.* SN. i. 1806, 605.

Turdus aurocapillus, *Lath.* IO. i. 1790, 328, n. 6.—*Wils.* AO. iii. 1810, 88, pl. 14, f. 2.—*Steph.* Gen. Zool. x. 1817, 199.—*V.* Ency. Méth. ii. 1823, 641, n. 14.—*Bp.* Journ. Phila. Acad. iv. 1824, 35.—*Nutt.* Man. i. 1832, 355; 2d ed. i. 1840, 404.—*Aud.* OB. ii. 1834, 253; v. 1839, 447, pl. 143.—*Peab.* Rep. Orn. Mass. 1839, 306.—*Towns.* Journ. Phila. Acad. viii. 1839, 153 (Northwestern United States).—*Thomps.* Vermont, 1853, 80.—*Read*, Pr. Phila. Acad. vi. 1853, 398.—*Willis*, Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).—*Gosse*, Alabama, 1859, 205.

Sylvia aurocapilla, *Bp.* Journ. Phila. Acad. iv. 1824, 35.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 77.

Sciurus aurocapillus, *Sw.* Zool. Journ. iii. 1827, 171; Phil. Mag. i. 1827, 369; Isis, 1830 1154.—*S. & R.* FBA. ii. 1831, 227.—*Bp.* CGL. 1838, 21.—*Aud.* Syn. 1839, 93.—*Aud.* BA. iii. 1841, 35, pl. 148.—*Gir.* BLI. 1844, 92.—*Gosse*, B. Jam. 1847, 152.—*Hoy*, Pr. Phila. Acad. vi. 1853, 310 (Wisconsin).—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 583.—*Pratten*, ibid. 601.—*Sallé*, PZS. 1857, 231 (San Domingo).—*Maxim.* J. f. O. 1858, 177.—*Bd.* BNA. 1858, 260.—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 407.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125 (Maine).—*Verr.* ibid. 137 (Anticosti).—*Verr.* Pr. Ess. Inst. iii. 1862, 146.—*Hayd.* Tr. Am. Philos. Soc. xii. 1862, 160.—*Blak.* Ibis, v. 1863, 62.—*March*, Pr. Phila. Acad. xv. 1863, 294 (Jamaica).—*Allen*, Pr. Ess. Inst. iv. 1864, 61.—*Bd.* Rev. AB. 1865, 214, 266.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*McIlwr.* Pr. Ess. Inst. v. 1866, 85 (Canada West).—*Bry.* Pr. Bost. Soc. xi. 1867, 91 (San Domingo).—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Trippe*, Am. Nat. ii. 1868, 182.—*Coues*, Pr. Bost. Soc. xii. 1868, 110.—*Coues*, Pr. Ess. Inst. v. 1868, 271.—*Jackson*, Am. Nat. iii. 1869, 556.—*Turnb.* B. E. Pa. 1869, 24; Phila. ed. 17.—*v. Frantz.* J. f. O. 1869, 293 (Costa Rica).—*Sumich.* Mem. Bost. Soc. i. 1869, 547 (Orizaba).—*Dall & Bann.* Tr. Chicago Acad. i. 1869, 268 (Alaska).—*Trippe*, Pr. Ess. Inst. vi. 1871, 115.—*Allen*, Bull. MCZ. ii. 1871, 269 (Florida, wintering); iii. 1872, 175 (Kansas).—*Coues*, Key, 1872, 105, f. 45.—*Mayn.* B. Fla. 1872, 12.—*Allen*, Am. Nat. vi. 1872, 269.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 358.—*Gundl.* J. f. O. 1872, 416 (Cuba).—*Packard*, Am. Nat. viii. 1874, 271.—*Ingersoll*, ibid. 239.—*Allen*, Pr. Bost. Soc. xvii. 1874, 52 (Dakota).—*Coues*, BNW. 1874, 70.—*B. B. & R.* NAB. i. 1874, 280, fig. pl. 14, f. 11.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Gentry*, Life-Hist. i. 1876, 138.—*Minot*, B. N. Engl. 1877, 84.

Sciurus aurocapillus, *D'Orb.* Ois. Cuba. 1839, 55.—*Denny*, PZS. 1847, 38.—*Putn.* Pr. Ess. Inst. i. 1856, 209.—*Hoy*, Smiths. Rep. for 1864, 1865, 437.—*Trippe*, Pr. Bost. Soc. xv. 1873, 234.

Siurus aurocapillus, *A. & E. Newt.* Ibis, i. 1859, 142 (St. Croix).—*S. & S.* Ibis, i. 1859, 9 (Guatemala).

Enicocichla aurocapilla, *Gray*, List G. of B. 1841, 31.

Enicocichla aurocapillus, *Brew.* Pr. Bost. Soc. vii. 1860, 306 (Cuba).

Henicocichla aurocapilla, *Cab.* MH. i. 1850, 15.—*Gundl.* J. f. O. 1855, 471 (Cuba).—*Cab.* J. f. O. 1861, 84 (Costa Rica).—*Gundl.* ibid. 326, 407 (Cuba).—*Lawr.* Ann. Lyc. N. Y. viii. 1865, 117 (Nicaragua).—*Salv.* PZS. 1870, 183 (Veragua).

Turdus auricapillus, *Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 57.
Accentor auricapillus, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.
Sciurus auricapillus, *Sw.* Class. B. ii. 1837, 247.—*Bp.* CA. i. 1850, 306.—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200 (Yucatan).—*Coues,* Pr. Phila. Acad. 1875, 349.
Siurus auricapillus, *Moore,* PZS. 1859, 55 (Omoa).—*Coues,* Bull. Nutt. Club, ii. 1877, 31 (correction of nomenclature).—*Merr.* Trans. Conn. Acad. iv. 1877, 20.
Henicocichla auricapilla, *Scl.* PZS. 1856, 293 (Mexico).—*Scl.* PZS. 1861, 70 (Jamaica).—*Albrecht,* J. f. O. 1862, 192 (Jamaica).—*S. & S.* PZS. 1870, 836 (Honduras).
Turdus citreus, *Müll.* SN. Suppl. 1776, 141 (*fide* Cassin, Pr. Phila. Acad. 1864; said to be based on PE. 398, f. 2).
Motacilla canadensis, *Bodd.* Tabl. PE. 1783, 24 (PE. 398, f. 2). (In part. The original quotation of PE. is this species, and so is the quotation of Edw. pl. 252; but the other references are to *Dendrœca coronata*).
Turdus minimus, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 290 *bis.* (Not of authors.)
Turdus coronatus, *V.* OAS. ii. 1807, 8, pl. 64.—*Less.* Tr. Orn. 1831, 418.
Anthus coronatus, *Gerhardt,* Naum. iii. 1853, 38.
Figuier à teste d'or de Pensilvanie, Ficedula pensilvanica auro-capilla, *Bries.* Orn. iii. 1760, 504, n. 57.
Golden-crowned Thrush, *Edw.* Gl. 91, pl. 252.—*Penn.* AZ. ii. 1785, 339, n. 203.—*Lath.* Syn. ii. pt. i. 1783, 21, n. 6.
Grivelette de S. Domingue, *Buff.* "Hist. Nat. Ois. iii. 317".
Petite Grive de St. Domingue, *Buff.* PE. 398, f. 2 (basis of *Mot. canadensis* Bodd.).
Grive couronnée, *V.* l. c. 1817.—*Le Moine,* Ois. Canad. 1861, 174.
Grive grivelette, *V.* l. c. 1823.
Land Kick-up, *Gosse,* B. Jam. 1847, 152.
Golden-crowned Accentor, Golden-crowned Wagtail, Orange-crowned Accentor, Ovenbird, *Authors.*

Hab.—Eastern North America to the Rocky Mountains (Denver, Colorado), the Yellowstone, and Alaska. South through the whole West Indies and Mexico (even at Mazatlan) and Central America. Breeds indifferently in its North American range. Winters from the Bermudas and Florida southward.

Ch. sp.—♂ ♀ *Virenti-olivaceus, infrà alba fusco striata; vertice aurantiaco-brunneo, nigro bistrigato; pedibus pallidè incarnatis. Long. tot.* 5½–6½; *alæ* 3; *caudæ* 2½.

♂ ♀, adult: Entire upper parts, including the wings and tail, uniform bright olive-green, without markings. Top of head with black lateral stripes, bounding a golden-brown or dull orange space. A white ring round eye; no white superciliary stripe. Under parts white, thickly spotted with dusky on the breast, the spots lengthening into streaks on the sides; a narrow black maxillary line; under wing-coverts tinged with yellow. Legs flesh-colored. Length about 6 inches; wing, 3; tail, 2¼.

This species exhibits a remarkable constancy of coloration with age, sex, and season. The sexes are indistinguishable, and the young are scarcely to be told from the adults. Fall specimens are ordinarily quite as clearly colored as those of the spring; and the orange-brown crown-spot, though it may be more or less bright, is acquired by the young with their first full feathering. There is doubtless a very early streaky stage.

ACCORDING to our present information, the Golden-crowned Accentor claims place here solely upon the strength of its observed occurrence at the base of the Rocky Mountains of Colorado, near Denver. It is more especially an Eastern species, though it reaches Alaska, and has been taken

on the west coast of Mexico. Our knowledge of its natural history has, strange to say in the case of so very common and widely diffused a bird, only very lately been completed by the discovery of its wonderful vocal powers, made independently by Mr. John Burroughs, as well known to naturalists by his delightful sketches of bird-life as he is to others by his essays in the field of general literature, and by Mr. George A. Boardman, whose name is inseparably connected with the culture of American ornithology.

Aquatic Accentor

Siurus nævius*

Motacilla nævia!, *Bodd.* Tableau PE. 1783, 47 (pl. 752, f. 1).
Siurus nævius, *Coues*, Bull. Nutt. Club, ii. 1877, 32.—*Merr.* Trans. Conn. Acad. iv. 1877, 20.

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* The third species of this genus has the following synonymy :—

Siurus motacilla.—Large-billed Accentor.

Turdus motacilla, *V.* OAS. ii. 1807, 9, pl. 65 (Kentucky; accurate description and recognizable figure).—*Steph.* Gen. Zool. x. 1817, 197.—*V.* N. D. d'H. N. xx. 1818, 234.—*V.* Ency. Méth. ii. 1823, 643, n. 20.
Sciurus motacilla, *Bp.* CA. i. 1850, 306.
Siurus motacilla, *Coues*, Bull. Nutt. Club, ii. 1877, 33.—*Merr.* Trans. Conn. Acad. iv. 1877, 20 (Connecticut).
Henicocichla motacilla, *Cab.* J. f. O. 1857, 240 (Cuba).—*Gundl.* J. f. O. 1861, 326 (Cuba).
Turdus ludovicianus, *Aud.* OB. i. 1832, 99, pl. 19 (afterward united it with *noveboracensis*).
Sciurus ludovicianus, *Bp.* CGL. 1838, 21.—*Bd.* BNA. 1858, 262; ed. of 1860, pl. 80, f. 2.—*Barn.* Smiths. Rep. for 1860, 1861, 435 (Chester County, Pa.).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 407 (Washington, D. C., common in spring).—*Bd.* Rev. AB. 1865, 217 (Colima, &c.).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284 (New York).—*Coues*, Pr. Ess. Inst. v. 1868, 271 (Southern New England).—*Trippe*, Am. Nat. ii. 1868, 183.—*Coues*, Pr. Bost. Soc. xii. 1868, 110 (South Carolina).—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*v. Frantz.* J. f. O. 1869, 293 (Costa Rica).—*Allen*, Am. Nat. iii. 1869, 512, 577 (Massachusetts).—*Turnb.* B. E. Pa. 1869, 24; Phila. ed. 17.—*Gundl.* J. f. O. 1872, 417 (Cuba).—*Coues*, Key, 1872, 106, pl. 2, f. 8.—*Scott*, Pr. Bost. Soc. xv. 1872, 222 (West Virginia).—*Coues*, Am. Nat. vii. 1873, 421.—*Purdie*, Am. Nat. vii. 1873, 693.—*Snow*, B. Kans. 1873, —.—*Ingersoll*, Am. Nat. viii. 1874, 238.—*Coues*, BNW. 1874, 72.—*B. B. & R.* NAB. i. 1874, 287, figs. pl. 14, f. 13.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440 (New England).—*Gentry*, Life-Hist. i. 1876, 145.—*Minot*, B. N. Engl. 1877, 83.
Siurus ludovicianus, *Scl.* PZS. 1859, 363 (Xalapa); 373 (Oaxaca).—*S. & S.* Ibis, ii. 1860, 273 (Guatemala).
Sciurus ludovicianus, *Trippe*, Pr. Bost. Soc. xv. 1873, 234 (Iowa).
Henicocichla ludoviciana, *Scl.* Cat. AB. 1861, 25 (Orizaba).—*Scl.* PZS. 1861, 70 (Jamaica).—*Albrecht*, J. f. O. 1862, 192 (Jamaica).—*Salv.* PZS. 1870, 183 (Veragua).
Henicocichla major, *Cab.* MH. i. 1850, 16 (Xalapa).—*Cab.* J. f. O. 1857, 240 (Cuba).
Enicocichla major, *Brew.* Pr. Bost. Soc. vii. 1860, 306 (Cuba).
Grive hochequeue, *V.* OAS. l. c., and EM. l. c.
Warbler Thrush, *Steph.* l. c.
Louisiana Water Thrush, Large-billed Water Thrush, *Authors.*

HAB.—Eastern United States. North to Massachusetts and Michigan. West to Kansas, the Indian Territory, and Texas. South through Mexico (the eastern portion at least) and Central America. Cuba and Jamaica. Breeds in its United States range at large. Winters extralimital. Abundant in many of the Southern and Western States. Rare toward the northern limits of its range.

Motacilla noveboracensis, *Gm.* SN. i. 1788, 958, n. 69 (primarily based on PE. 752, *f.* 1 = *nævia* Bodd.).—*Less.* Tr. Orn. 1831, 418.

Sylvia noveboracensis, *Lath.* IO. ii. 1790, 518, n. 33.—*V.* OAS. ii. 1807, 26, pl. 82.—*Steph.* Gen. Zool. x. 1817, 681.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 77.

Turdus (Sciurus) noveboracensis, *Nutt.* Man. i. 1832, 353 (in part. Not *Turdus noveboracensis* of Gm. and Lath., which is *Scolecophagus ferrugineus.*)

Turdus noveboracensis, *Peab.* Rep. Orn. Mass. 1839, 306.—*Thomps.* Vermont, 1853, 79.—*Read,* Pr. Phila. Acad. vi. 1853, 398.

Sciurus noveboracensis, *Bp.* CGL. 1838, 21.—*Gosse,* B. Jam. 1847, 151; Ill. pl. 33.—*Bp.* CA. i. 1850, 306.—*Hartl.* Naum. ii. 1852, 53 (Cuba).—*Hoy,* Pr. Phila. Acad. vi. 1853, 310.—*Kennic.* Tr. Ill. Agric. Soc. i. 1855, 582.—*Maxim.* J. f. O. 1858, 124.—*Martens,* J. f. O. 1859 213 (Bermuda) —*Bland,* Smiths. Rep. for 1858, 1859, 287 (Bermudas).—*Cass.* Pr. Phila. Acad. xii. 1860, 91 (Isthmus of Darien).—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 322 (New Granada).—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 160.—*Verr.* Pr. Ess. Inst. iii. 1862, 146.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Blak.* Ibis, iv. 1862, 4 (Saskatchewan); v. 1863, 62.—*March,* Pr. Phila. Acad. xv. 1863, 294 (Jamaica).—*Bd.* Rev. AB. 1865, 215.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Bry.* Pr. Bost. Soc. xi. 1867, 91 (San Domingo).—*Trippe,* Am. Nat. ii. 1868, 182.—*Coues,* Pr. Bost. Soc. xii. 1868, 110.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200 (Yucatan).—*v. Frantz.* J. f. O. 1869, 293 (Costa Rica).—*Turnb.* B. E. Pa. 1869, 24; Phila. ed. 17.—*Coues,* Key, 1872, 106.—*Gundl.* J. f. O. 1872, 416 (Cuba).—*Scott,* Pr. Bost. Soc. xv. 1872, 222.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 358.—*Mayn.* B. Fla. 1872, 14.—*Purdie,* Am. Nat. vii. 1873, 692 —*Coues,* BN W. 1874, 71.—*B. B. & R.* NAB. i. 1874, 283, pl. 14, f. 12.—*? Allen,* Pr. Bost. Soc. xvii. 1874, 52 (Dakota).—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 204.—*Minot,* B. N. Engl. 1877, 81.

Siurus noveboracensis, *S. & S.* Ibis, i. 1859, 10 (Guatemala).—*A. & E. Newt.* ibid. 142 (St. Croix).—*Scl.* PZS. 1859, 363 (Xalapa).—*Allen,* Pr. Ess. Inst. iv. 1864, 61.—*Dress.* Ibis, 2d ser. i. 1865, 477 (Texas).

Seiurus noveboracensis, *Hensh.* Rep. Orn. Specs. 1874, 59 (Colorado).

Sciurus noveboracensis, *Gentry,* Life-Hist. i. 1876, 142.

Enicocichla noveboracensis, *Gray.*—*Kaeel.* Pr. Bost. Soc. vi. 1857, 233.—*Brew.* Pr. Bost. Soc. vii. 1860, 306 (Cuba).

Henicocichla noveboracensis, *Cab.* "Schomb. Guiana, iii. 1848, 666".—*Cab.* MH. 1850, 16.—*Gundl.* J. f. O. 1855, 471 (Cuba).—*Cab.* J. f. O. 1860, 324 (Costa Rica).—*Scl.* PZS. 1861, 70 (Jamaica).—*Gundl.* J. f. O. 1861, 326, 407 (Cuba).—*Albrecht,* J. f. O. 1862, 192 (Jamaica).—*S. & S.* PZS. 1864, 346 (Panama).—*S. & S.* PZS. 1868, 627 (Venezuela).—*S. & S.* PZS. 1869, 251 (Venezuela).—*S. & S.* PZS. 1870, 836 (Honduras).—*Salv.* PZS. 1870, 183 (Veragua).

Motacilla novæboracensis, *Turt.* SN. i. 1806, 589.

Turdus (Sciurus) novæboracensis, *Nutt.* Man. i. 2d ed. 1840, 402 (in part).

Sciurus novæboracensis, *Aud.* Syn. 1839, 93.—*Aud.* BA. iii. 1841, 37, pl. 49 (in part).—*Gir.* BLI. 1844, 93.—*Pratten,* Tr. Ill. Agric. Soc. i. 1855, 601.—*McIlvr.* Pr. Ess. Inst. v. 1866, 85.—*Coues,* Pr. Phila. Acad. xviii. 1866, 71 (Arizona).—*Coues,* Pr. Ess. Inst. v. 1868, 271.—*Coop.* Am. Nat. iii. 1869, 32.

Sciurus novæboracensis, *Putn.* Pr. Ess. Inst. i. 1856, 209.

Motacilla tigrina, *var. β. Gm.* SN. i. 1788, 985, n. 153 *β.* (based on *Briss.* iii. 513).

Motacila tigrina, 2, *Turt.* SN. i. 1806, —.

Sylvia tigrina, *var. β, Lath.* IO. ii. 1790, 537, n. 110 *β.* (= Gm.).

Figuier brun de S. Domingue, Ficedula Dominicensis fusca, *Briss.* Orn. iii, 1760, 513, n. 62, pl. 28, f. 5 (obviously this species; basis of *Mot. tigrina* var. *β.* of Gm.).

Spotted Yellow Warbler, *var. A., Lath.* Syn. ii. pt. ii. 1783, 483, *var. A.*

Motacilla fluviatilis, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 291.

Turdus aquaticus, *Wils.* AO. iii. 1811, 66, pl. 23, f. 5.—*Steph.* Gen. Zool. x. 1817, 183.—*Aud.* OB. v. 1839, 284, pl. 433, f. 7.—*Haym.* Pr. Phila. Acad. viii. 1856, 289.

Sciurus aquaticus, *S. & R.* FBA. ii. 1831, 229, pl. 43.—*Sw.* Class. B. ii. 1837, 247.

Turdus aquatius, *Bp.* Journ. Phila. Acad. iv. 1824, 34.

Sylvia anthoides, *V.* N. D. d'H. N. x. 1817, 208.—*V.* Ency. Méth. ii. 1823, 421, n. 19.—*Less.* Tr. Orn. 1831, 418.

Turdus motacilla, *Bp.* Journ. Phila. Acad. iv. 1824, 35 (adopts Vieillot's name for this species).
Sciurus tenuirostris, *Sw.* Phil. Mag. i. 1827, 369.
Sciurus tenuirostris, *Gamb.* Pr. Phila. Acad. i. 1843, 261 (Colorado River).
Sciurus sulfurascens, *D'Orb.* Ois. Cuba, 1839, 57, pl. 6.
Sciurus sulphurascens, *Bp.* CA. i. 1850, 306.
Enicocichla sulphurascens, "*Gray*".
Henicocichla sulphurascens, *Gundl.* J. f. O. 1855, 471 (Cuba).—*Gundl.* J. f. O. 1861, 407 (Cuba).
Anthus lherminieri, *? Less.* Rev. Zool. 1839, 101.
Sciurus gossii, *Bp.* CA. i. 1850, 306 (Jamaica).
Fauvette tachetée de la Louisiane, *Buff.* "Hist. Nat. Ois. v. 161"; PE. 752, f. 1 (basis of Boddaert's and Gmelin's names).
New York Warbler, *Penn.* A Z. ii. 1785, 409, n. 308.—*Lath.* Syn. ii. pt. ii. 1783, 436, n. 29.
Fauvette brune, *V.* OAS. l. c.
Fauvette pipi, *V.* l. c. 1817 and 1823.
Grive de rouisseaux ou Hochequeue, *Le Moine,* Ois. Canad. 1861, 173.
Bessy Kick-up, River Pink, *Gosse,* B. Jam. 1847, 151.
New York *or* **Aquatic Thrush, Water Thrush, Aquatic Wood-wagtail, Aquatic Accentor, Small-billed Water Thrush,** *Authors.*

Hab.—North America at large. Mexico, West Indies, Central America and much of South America. Winters from Florida and the Gulf coast southward. Breeds in the greater part, if not the whole, of its North American range.

Ch. sp.—♂ ♀ *Olivaceo-fuscus, alis caudâque concoloribus; infrà albido-sulphurascens, undique olivaceo-fusco striatus; striga superciliari brunneo-albido; rostro pedibusque obscuris.*

♀ ♂: Uniform dark olive-brown, the wings and tail similar, unmarked; below very pale sulphury-yellow, everywhere, except perhaps on the middle of the belly, thickly speckled or streaked with dark olive-brown, the markings smallest on the throat, largest on the sides. A long dull whitish superciliary line. Bill and feet dark. Length, 5½–6; extent, 8½–9½; wing, 2¾–3; tail, 2½; bill not over ½ along the culmen.

The sexes do not differ appreciably, and the youngest birds examined are not notably different from the adult; but I have not seen the newly-fledged bird. The shade of the upper parts varies from a decidedly olivaceous-brown to a purer, darker bistre-brown, and that of the under parts from sulphur-yellow to nearly white; but it is never of the buffy-white of *S. motacilla.* The streaking varies in amount and intensity, but always has the sharp distinct character of the species in comparison with *S. motacilla,* and is rarely if ever absent from the throat. I have seen no bill over half an inch long, and this member lacks the peculiar shape, as well as size, characteristic of *S. motacilla.*

The earliest feathering has only lately been described, and it proves to be streaky, as might have been anticipated. Mr. Ridgway speaks of a very young bird as being sooty-blackish, with each feather of the upper parts with terminal bar of ochraceous; the wing-coverts tipped with the same, forming two bars; the streaks below as in the adult, but broader and not so sharply defined.

It should be noted that *Motacilla noveboracensis* of Gm., the name currently

adopted, is the same as *M. nævia* Bodd. (1783), both being based upon Pl. Enlum. 752, f. 1, which represents the *Fauvette tachetée de la Louisiane* of Buffon, afterward the New York Warbler of Pennant and Latham. It is a curious fact, that Gmelin in another place made *Siurus nævius* out to be a variety of the Cape May Warbler, *Dendræca tigrina:* for the *Motacilla tigrina* var. *β.* of Gmelin, and the *Sylvia tigrina* var. *β.* of Latham, are both based exclusively upon the *Ficedula dominicensis fusca* of Brisson, which is obviously this *Siurus*. Vieillot, in 1807, noticed the circumstance, which later authors seem to have overlooked, and correctly allocated the synonymy.—The *Motacilla fuscescens* of Gmelin has been queried as a synonym of this species; it is based upon *Ficedula jamaicensis* Briss. iii. 512, n. 61; but Brisson's account cannot be made to square with the characters of *Siurus nævius*. The remaining references above given, though so numerous, do not call for special remark, excepting Audubon's accounts, which, it should be remembered, include both this species and *S. motacilla*, as he united the two, having previously described *Turdus ludovicianus* as distinct. These and other technical points are discussed in my paper above cited, on "Corrections of Nomenclature in the Genus *Siurus*".

MATERIAL for the life-history of the Water Thrush has gradually accumulated, until we now possess knowledge enough of the subject for a more complete biography than has hitherto appeared. The latest article, that from the long-accustomed pen of Dr. Brewer, is much the best, though the many items there given are perhaps none too closely knit into consequent narrative. As Dr. Brewer justly remarks, all that the earlier authors have left us respecting the habits of this bird must be taken *cum grano;* for it was a good while before the Louisiana or Large-billed Water Thrush was fairly recognized, and much that Wilson, Nuttall, and Audubon have to say of the Water Thrush refers either to the other species, or to both species indiscriminately. Audubon indeed capped the confusion by reuniting the two species which he had formerly distinguished with sufficient precision. Wilson pertinently describes the aquatic habits and Motacilline actions of the true Water Thrush as observed in Pennsylvania; but the rest of his notice seems to point to the Large-billed bird. Nuttall's and Audubon's whole accounts parallel Wilson's in this regard; and none of these authors seem to speak of the vocalization, nidification, and breeding habits of the real Water Thrush, but rather of the Louisiana species. Sir John Richardson must have had the present species in exclusive view, as the other is not found about Carlton House; and Swainson's plate is unmistakable. Mr. Philip Henry Gosse gives us one of his delightful and characteristic sketches, undoubtedly referring to the present species,

under the names of "River Pink" and "Bessy Kick-up". These notices, including, of course, Dr. Brewer's last and best one, are among the principal accounts we have; for if the long synonymatic list I present with this article be analyzed, it will be found to consist largely of the compilations of name-peddlers, otherwise known as systematists, taxonomists, and philosophers, who describe and redescribe with insufficient knowledge of what their predecessors have done, and in whose hands natural history becomes not unlike a kaleidoscopic tube, where names, like colored bits of glass, leap into fantastic shapes at the touch of the pen-point. Few indeed of the namers of the many species that have sprung up like mushrooms in the fertile compost-heap of synonymy knew anything of the Water Thrush except as a museum object; and, as if there were not names enough already, several of the French ornithologists, with characteristic vivacity, bestowed a number more. Wilson knew the bird he called *Turdus aquaticus*, and so doubtless did Bartram when he called it *Motacilla fluviatilis*. Among the earlier notices, we have several from independent original sources; such are that of Pennant's "New York Warbler", and Buffon's "Fauvette tachetée de la Louisiane", and Brisson's "Figuier brun de S. Domingue"; and Buffon's bird, figured on the Planche Enluminée 752, afforded the very first technical name of the species, that bestowed in 1783 by the cataloguer Boddaert.

Very many of the numerous citations I have compiled, however, are those I give to certify the recognized geographical distribution of the species, as vouchers for its occurrence in the widely separated localities which, when duly collated, enable us to map its dispersion and trace its movements. This is always an important subject, and one which, I think, more than justifies the bibliographical matter which may seem to the general reader to so heavily handicap the present volume, but which is the real ballast of the book if not the most valuable part of the cargo which I bring. By such researches I have traced the spread of the Water Thrush over all of North America, there being few small areas and no large ones whence I have not gathered reports of its presence—through Mexico and Central America—among nearly all of the West Indies—and for a considerable distance into South America. Its latitudinal dispersion is from Brazil to the Arctic Ocean; in longitude, it reaches across the northern half of the Western Hemisphere, and perhaps of the southern portion also; though I believe that our

South American records to date do not attest its presence on the western side of South America. In the greater part of North America, it is of general and common occurrence, and the same is the case in the West Indies, Eastern Mexico, and Cen'ral America. It is not so frequent, perhaps less regular in its appearances, and, at any rate, not so commonly observed, in the Middle and Western Provinces of North America, as it is in the Eastern; but we may remember that the observers are there far fewer. This is a migratory species, of course; for no small insectivorous bird covers such an extent of country as I have indicated at all seasons of the year. In this matter of its movements we may note, first, that it is not accredited with any extralimital record of breeding, so far as I can now recall; but I speak guardedly here, as the record is voluminous, and among the many notices extant there may be some indicating that certain individuals do not perform the extensive migrations required for their presence within the bird's recognized breeding range in North America. As to its nesting in the southern portions of the United States, we must put out of court such testimony as is vitiated by references to *S. ludovicianus;* and this aside, there is no evidence that I know of to prove that the bird nestles south of about the latitude of Washington, D. C. There I have myself found the Water Thrush through the summer, under circumstances that leave no doubt of its breeding. Almost directly north of such latitude, accounts of its summer residence and nidification begin to multiply, and its nesting thence to the Arctic regions is established.

As will have been inferred already, the winter resorts of the Water Thrush are for the most part beyond our limits; yet the fact that many individuals linger through the year in the Southern States is well attested. In Illinois, for example, where *S. motacilla* breeds in abundance, the Water Thrush is only known as a migrant and as a partial winter resident. According to Mr. Ridgway, they reappear from the north in August, and many linger in the sheltered forests of the river-bottoms, where he has heard them singing in December and January. The period and duration of the vernal and autumnal movements are not easily determined in the case of a bird that gets over so much ground; but the months of April and September appear to be those when the migrations are at their height. I may give some isolated data bearing on this subject. In Jamaica, Mr. March found Water Thrushes from early in August to the

end of March. Henshaw saw the birds in Colorado in the middle of May, and in Arizona late in August. May is the month in which their arrival has been noted for the Middle States and New England, and also for the Saskatchewan region. Could all the data we have be verified and digested, we should probably find that the Water Thrush is a bird of rapid and not of the most regular migration, likely to appear at such times and places that it becomes difficult to reconcile the seemingly conflicting testimony we possess.

June is the height of the breeding season with this bird. During this month, egg-laden nests have been found so far apart as are Maine and Alaska—early in the month in the New England locality just mentioned, and later on the Yukon River. Doubtless only one brood is reared in the higher latitudes to which the birds resort; the case may also be the same in other localities, and probably is so, considering how soon—by the fore part of August—these birds reappear in places where they are not known to breed, as in Illinois and Jamaica. In the few instances which have come to the knowledge of naturalists, the Water Thrush's nest was built on the ground or its equivalent. The Alaskan nests to which I have alluded were placed by the river bank, at the foot of willow-bushes, one of them beneath a small pile of drift-wood, and contained four to six eggs. These and other Arctic nests, as preserved in the Smithsonian Institution, are about four inches across by two-thirds as much in depth; they are composed chiefly of moss, compactly matted and mixed with little sticks and straws, one of them having also a large amount of circularly-woven fibrous material in a state of disintegration. A nest found in Maine by Prof. A. E. Verrill, and described with particularity by Dr. Brewer, was built in an excavation in the side of a decayed log, which overarched the structure somewhat as the domed portion of the nest of the Golden-crowned Thrush covers the main part of the structure. It was a beautiful fabric, built chiefly of green *Hypnum* mosses, with which a few withered leaves and plant-stems were mixed, having a compact inner portion or lining of the fruit-stems of the same *Hypnum*, and showing a number of slender black rootlets intertwined around the outer circumference. It was flatter and shallower than the nests I have seen, being four and a half inches across, but only one and a half high, with a cavity half an inch less in depth. "This nest contained five eggs, the brilliant white ground of which,

with their delicately shaded spots of reddish brown, contrasted with the bright green of the mossy exterior, and set off to advantage by the conspicuous and unique lining, produce a very beautiful effect."

The numerous eggs I have examined—all, however, after they had been emptied of their contents—measure from three-fourths to four-fifths of an inch in length by a little more or less than two-thirds of an inch in breadth—more exactly, two selected specimens give respectively the measurements 0.75×0.58 and 0.82×0.60. The ground-color of the shell is brilliant crystal-white; this is marked all over, but in most cases more thickly at and around the larger end than elsewhere, with small spots of reddish, of quite dark brown, and of lilac or lavender—sometimes all the spots being dots and mere points; sometimes many of them being larger, and more or less confluent to enwreathe the greater end of the egg. Occasionally the other end, or even some considerable part of the egg, is nearly free from markings, but the shell, as a rule, is pretty thoroughly speckled.

The singing of birds is inseparably associated with the power and the desire to bring forth, as the involuntary and uncontrollable expression of emotions that are never stayed except through gratification. Surcease of passion is the fountain brimming over, when the stream of life flows downward like the loosened brook forever, and the babbling of the waters makes unconscious melody. I never heard the singing of this Water Thrush, nor do I find it carefully described; but it is likened, with good reason, to the song of the Louisiana, and this is so melodious, so loud and yet so mellow, as when once heard to slowly be forgotten. Both Audubon and Nuttall have expressed their admiration of this Philomel's performance, which the latter says is even heard at night, when the sweet incessant warbling greets the ear "like the dulcet lay of some fairy vision". It was long before we found out that the Golden-crown sings also, for the harsh crescendo ditty of this bird is scarcely to be called a song; and when the vocal powers of the humbler Water Thrush receive full recognition, we shall doubtless know the three birds for a trio scarcely rivalled by the Wood Thrush and the Hermit and the Veery. Mr. Boardman calls the Water Thrush one of our liveliest singers, beginning with a sudden, almost startling burst of melody, that rings as clear as if the joyous bird had found a long-lost mate, and then keeps falling till the slightest breath of air may blow the rest away. Its secrecy in singing lends a charm to the performance, for though

the notes are sounded loud and fearlessly, the bird dislikes intrusion; and it sings best far away from prying eyes, amidst the dark recesses of the swamp.

Should you force your way,—perhaps by paddling in a light canoe beneath the overhanging mysteries of the dank morass,—perhaps by clambering among the fallen logs that jut from treacherous black depths of ooze and slime—you may even catch a glimpse of this coy songster as he dashes onward into yet more secret fastness of his watery and seldom sun-lit home. His song is still now; silence broods, or else a sharp short note of anger and anxiety betrays the presence of the timid bird, too restless and too nervous in his vague alarm to hide in safety, but rather dallying with danger as he leaps and balances on log, moss-heap, or branchlet. But this is only when he feels the cares and full responsibilities of home and family. Later in the season, when these things are off his mind, he is quite another fellow, who will meet you more than half-way should you chance to find him then, with a wondering, perhaps, yet with a confident and quite familiar, air of easy unconcern. Anywhere by the water's edge—in the *débris* of the wide-stretched river-bottom, in the flowery tangle of the brook, around the margins of the little pools that dot the surface where tall oaks and hickories make pleasant shade—there rambles the Water Thrush. Watch him now, and see how prettily he walks, rustling among the fallen leaves where he threads his way like a mouse, or wading even up to his knees in the shallow miniature lakes, like a Sandpiper by the sea-shore, all intent in quest of the aquatic insects, worms, and tiny molluscs and crustaceans that form his varied food.* But as he rambles on in this gliding course, the mincing steps are constantly arrested, and the dainty stroller poises in a curious way to see-saw on his legs, quite like a Titlark or a Spotted Sandpiper. All of his genus share this gait, quite different from the hopping movement with which the *Sylvicolidæ* in general progress—but see! he catches sight of us, and quite breaks off the thread of such reflections as he casts his bright brown eye upon us with a coquettish turning sideways of the head. Let the pretty picture be—we leave him to resume in peace his morning's walk, bidding good-speed.

* Gosse has found the stomach to contain "water-insects and shells". Gentry has observed the beetles *Platynus cupripennis*, *Harpalus pennsylvanicus*, and *Cratonychus pertinax*, the Neuropterous larvæ of *Agrion* and *Phryganea*, both larvæ and imagos of various Noctuid and Tineid moths, and the Dipterous *Culex tæniorhynchus*.

Genus GEOTHLYPIS Cabanis

Trichas, *Sw.* Zool. Journ. iii. April–July, 1827, 167 (not of Gloger, March, 1827, = *Criniger* Temm., *fide* Cabanis). Type *Turdus trichas* L.

Geothlypis, *Cab.* "Arch. f. Naturg. 1847, Bd. i. 316, 349". Same type.—*Bd.* BNA. 1858, 240.—*Bd.* Rev. AB. 1865, 219 (review of genus; nine species).—*Ridgw.* Am. Journ. Sci. 1872, 457 (monographic; five species and twelve varieties).—*Salv.* Ibis, 1872, 147 (eight species and three varieties).

CHARS.—Bill of ordinary Sylvicoline characters; rictal bristles very slight. Wings remarkably short and much rounded, scarcely or not longer than the rounded tail. Legs stout; tarsi longer than the middle toe. Of medium and rather small size for this family. Coloration olivaceous above, with yellow below. Tail without white spots. Legs pale-colored. Habits somewhat terrestrial. Nest on the ground or near it.

This genus affords a considerable number of species more or less resembling the common Maryland Yellow-throat, chiefly of the warmer parts of America—three of them, however, are North American, and two occur in the Colorado watershed. They are well distinguished from other Warblers by the extreme shortness of the wings, which are scarcely or not longer than the head, and by the size of the pale-colored legs, which indicates somewhat terrestrial habits. Our species are familiar inhabitants of the shrubbery, ordinarily keeping near the ground, where the nest is usually placed.

Oporornis is the most closely related genus, distinguished mainly by the greater length of the pointed wings, which are much longer than the tail. This type is represented by only two known species, neither of which occurs in the region under consideration.*

***Oporornis agilis.—Connecticut Warbler.**

Sylvia agilis, *Wils.* AO. v. 1812, 64, pl. 39, f. 4.—*Steph.* Gen. Zool. x. 1817, 732.—*V.* Ency. Méth. ii. 1823, 448, n. 101.—*Bp.* Journ. Phila. Acad. iv. 1824, 199.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 84.—*Aud.* OB. ii. 1834, 227, pl. 138.

Silvia agilis, *Cabot,* Pr. Bost. Soc. ii. 1845, 63.

Trichas agilis, *Nutt.* Man. i. 2d ed. 1840, 463.—*Hoy,* Proc. Phila. Acad. vi. 1853, 312 (Wisconsin).—*Read,* ibid. 399 (Ohio).—*Kenn.* Tr. Illinois Agric. Soc. i. 1855, 583.

Sylvicola agilis, *Jard.* "ed. Wils. 1832".—*Rich.* Rep. Bost. Assoc. Adv. Sci. for 1836, 1837, 172.—*Aud.* Syn. 1839, 63.—*Aud.* BA. ii. 1841, 71, pl. 99.—*Putn.* Pr. Ess. Inst. i. 1856, 226.

Oporornis agilis, *Bd.* BNA. 1858, 246; ed. of 1860, pl. 79, f. 2.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 363.—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Coues & Prent.* ibid. for 1861, 1862, 406.—*Allen,* Pr. Ess. Inst. iv. 1864, 82.—*Bd.* Rev. AB. 1865, 218.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*Coues,* Pr. Ess. Inst. v. 1868, 269.—*Coues,* Pr. Bost. Soc. xii. 1868, 110 (South Carolina).—*Trippe,* Am. Nat. ii. 1868, 174.—*Allen,* Am. Nat. iii. 1869, 574.—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.—*Coues,* Key, 1872, 106.—*Brew.* Pr. Bost. Soc. xv. 1872, 3.—*Purdie,* Am. Nat. vii. 1873, 693.—*B. B. & R.* NAB. i. 1874, 290, fig. pl. 15,

Maryland Yellow-throat

Geothlypis trichas

Turdus trichas, *L.* SN. i. 1766, 293, n. 7 (Edw. v. 56, pl. 237, f. 2; Briss. iii. 506; Petiv. Gaz. pl. 6, f. 1).—*Gm.* SN. i. 1788, 811, n. 7.—*Less.* Tr. Orn. 1831, 418.

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f. 1, 2.—*Ames*, Bull. Minn. Acad. i. 1874, 55.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Gentry*, Life-Hist. 1876, 147.—*Minot*, B. N. Engl. 1877, 88.—*Merr.* Trans. Conn. Acad. iv. 1877, 21.

Geothlypis agilis, *Gregg*, Pr. Elmira Acad. 1870, — (p. 7 of the reprint).
Seiurus (Oporornis) agilis, *Ridgw.* Ann. Lyc. N. Y. x. 1874, 369 (Illinois).
? Trichas tephrocotis, *Nutt.* Man. i. 2d ed. 1840, 462 (Chester County, Pa.).
? Geothlypis tephrocotis, *Barn.* Smiths. Rep. for 1860, 1861, 435 (Chester County, Pa.; same).
? Oporornis varius, *Blak.* Ibis, v. 1863, 61 (Mackenzie River ???).
Fauvette agile, *V.* l. c. 1823.
Connecticut Warbler, Connecticut Wood-warbler, *Authors.*

Hab.—Eastern Province of the United States. (The geographical distribution of this species is very imperfectly known. We have no extralimital citations that I know of, nor any winter record whatever; nor has the bird ever been found breeding.)

Oporornis formosa.—Kentucky Warbler.

Sylvia formosa, *Wils.* AO. iii. 1811, 85, pl. 25, f. 3.—*Steph.* Gen. Zool. x. 1817, 683.—*V.* Ency. Méth. ii. 1823, 450, n. 108.—*Bp.* Journ. Phila. Acad. iv. 1824, 197.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 84.—*Aud.* OB. i. 1831, 196, pl. 38.—*Nutt.* Man. i. 1832, 399.—*Storer*, Pr. Bost. Soc. i. 1841, 29.—*Gieb.* Vög. 1860, 51, f. 103.

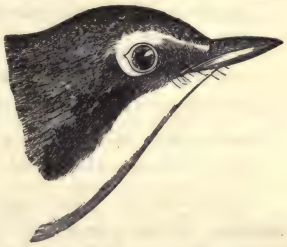

Fig. 39.—Kentucky Warbler.

Sylvicola formosa, *Jard.* "ed. Wils. 1832".—*Rich.* Rep. Brit. Assoc. for 1836, 1837, 172.—*Bp.* List, 1838, 23.—*Hoy*, Pr. Phila. Acad. vi. 1853, 311 (Wisconsin).—*Read*, ibid. 399.—*Mazim.* J. f. O. vi. 1858, 113.
Mniotilta formosa, *Gray*, G. of B. i. 1848, 196.
Trichas (Sylvicola) formosa, *Hoy*, Smiths. Rep. for 1864, 1865, 438 (Missouri).
Myiodioctes formosus, *Aud.* Syn. 1839, 50.—*Aud.* BA. ii. 1841, 19, pl. 74.—*Lemb.* "Av. Cuba, 1850, 37".—*Gundl.* J. f. O. 1861, 326 (Cuba).
Myiodioctes formosa, *Bp.* CA. i. 1850, 315.
Myodioctes formosa, *Pratten*, Tr. Illinois Agric. Soc. 1855, 601.
Sylvania formosa, *Woodh.* Sitgr. Rep. Zuñi, 1853, 70.
Myioctonus formosus, *Gundl.* J. f. O. 1855, 472 (Cuba).
Setophaga formosa, *Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).
Oporornis formosus, *Bd.* BNA. 1858, 247.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 363.—*Barn.* Smiths. Rep. for 1860, 1861, 435 (Pennsylvania).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 406 (Washington, breeding).—*Lawr.* Ann. Lyc. N. Y. vii. 1862, 468 (New Granada).—*Dress.* Ibis, 2d ser. i. 1865, 477 (Texas).—*Bd.* Rev. AB. 1865, 218.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Salv.* PZS. 1867, 136 (Veragua).—*Trippe*, Am. Nat. ii. 1868, 181.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Coues*, Pr. Bost. Soc. xii. 1868, 110 (South Carolina).—*v. Frantz.* J. f. O. 1869, 293 (Costa Rica).—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.—*Gundl.* J. f. O. 1872, 417 (Cuba).—*Coues*, Key, 1872, 106, f. 46.—*Allen*, Am. Nat. vi. 1872, 265.—*Scott*, Pr. Bost. Soc. xv. 1872, 222 (West Virginia, breeding).—*Allen*, Bull. MCZ. iii. 1872, 125, 175 (Kansas).—*Coues*, BNW. 1874, 73.—*B. B. & R.* NAB. i. 1874, 293, pl. 15, f. 3.—*Brew.* Pr. Bost. Soc. xvii. 1875, 451 (New England).—*Fisher*, Am. Nat. x. 1875, 573 (New York, breeding).—*Gentry*, Life-Hist. i. 1876, 149.—*Merr.* Trans. Conn. Acad. iv. 1877, 22 (Connecticut).

Sylvia trichas, *Lath.* IO. ii. 1790, 519, n. 36.—*V.* OAS. ii. 1807, 28, pls. 85, 86.—*V.* N. D. d'H. N. xi. 1817, 229.—*Steph.* Gen. Zool. x. 1817, 682.—*V.* Ency. Méth. ii. 1823, 443, n. 85.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 84.—*Nutt.* Man. i. 1832, 401.—*Aud.* OB. i. 1832, 120; v. 1839, 463, pl. 23.—*D'Orb.* Ois. Cuba, 1839, 67.—*Peab.* Rep. Orn. Mass. 1839, 311.—*Towns.* Journ. Phila. Acad. viii. 1839, 153.—*Thomps.* Vermont, 1853, 83.—*Gosse,* Alabama, 1859, 295.

Sylvia trichas *var. β. Lath.* IO. ii. 1790, 519, n. 36 *β* (= PE. 709, f. 2; *Orange-thighed Warbler* Penn.).

Geothlypis trichas, *Cab.* MH. i. 1850, 16.—*Gundl.* J. f. O. 1855, 472 (Cuba).—*Bd.* BNA. 1858, 241.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 10.—*S. & S.* Ibis, i. 1859, 10 (Guatemala).—*Scl.* PZS. 1859, 363 (Xalapa); 373 (Oaxaca).—*Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*Henry,* Pr. Phila. Acad. xi. 1859, 106 (New Mexico).—*Coop. & Suck.* NHWT. 1860, 177.—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Cab.* J. f. O. 1861, 84 (Costa Rica).—*Scl.* PZS. 1861, 70 (Jamaica).—*Scl.* Cat. AB. 1861, 267.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 160.—*Boardm.* Pr. Bost. Soc. ix. 1862, 124.—*Verr.* ibid. 137 (Anticosti).—*Verr.* Pr. Ess. Inst. iii. 1862, 146.—*Albrecht,* J. f. O. 1862, 192 (Jamaica).—*March,* Pr. Phila. Acad. xv. 1863, 293 (Jamaica).—*Lord,* Pr. Roy. Arty. Inst. iv. 1864, 115.—*Allen,* Pr. Ess. Inst. iv. 1864, 59.—*Bd.* Rev. AB. 1865, 220.—*Dress.* Ibis, i. 2d ser. 1865, 476 (Texas).—*Coues,* ibid. 163 (Arizona).—*Coues,* Pr. Phila. Acad. xviii. 1866, 69 (Fort Whipple).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*McIlwr.* Pr. Ess. Inst. v. 1866, 85.—*Brown,* Ibis, 2d ser. iv. 1868, 420 (Vancouver).—*Coues,* Pr. Bost. Soc. xii. 1868, 110.—*Coues,* Pr. Ess. Inst. v. 1868, 269.—*Trippe,* Am. Nat. ii. 1868, 176.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200 (Yucatan).—*v. Frantz.* J. f. O. 1869, 293 (Costa Rica).—*Coop.* Am. Nat. iii. 1869, 296.—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.—*S. & S.* PZS. 1870, 836 (Honduras).—*Coop.* B. Cal. i. 1870, 95, figs.—*Coues,* Pr. Phila. Acad. xxiii. 1871, 20.—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 463.—*Allen,* Bull. MCZ. ii. 1871, 269; iii. 1872, 175.—*Allen,* Am. Nat. vi. 1872, 265.—*Coues,* Key, 1872, 107, f. 47.—*Salv.* Ibis, 3d ser. ii. 1872, 149 (monographic).—*Gundl.* J. f. O. 1872, 417 (Cuba).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 362.—*Scott,* Pr. Bost. Soc. xv. 1872, 222.—*Aiken,* Pr. Bost. Soc. xv. 1872, 197.—*Coues,* Key, 1872, 107, f. 47.—*Ridgw.* Am. Nat. vii. 1872, 550.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 674, 713.—*Trippe,* Pr. Bost. Soc. xv. 1873, 234.—*Ridgw.* Bull. Ess. Inst. v. 1873, 180.—*Allen,* Pr. Bost. Soc. xvii. 1874, 52 (Dakota).—*Coues,* BNW. 1874, 74.—*Merr.* Am. Nat. viii. 1874, 7, 8, 87.—*Pack.* Am. Nat. viii. 1874, 271.—*B. B. & R.* NAB. i. 1874, 297, figs. pl. 15, f. 7, 8.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 10.—*Hensh.* ibid. 42, 59, 103.—*Hensh.* List B. Ariz. 1875, 156.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 204.—*Gentry,* Life-Hist. i. 1876, 152.—*Minot,* B. N. Engl. 1877, 85.

Geothlypis trichis, *Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 705.

Motacilla trichias, *Turt.* SN. i. 1806, 590.

Regulus peregrinus, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 292.

Sylvia marylandica, *Wils.* AO. i. 1808, 88, pl. 6, f. 1; ii. 1809, 163, pl. 18, f. 4.—*Bp.* Journ. Phila. Acad. iv. 1824, 186.—*Gieb.* Vög. 1860, 57, f. 111.

Trichas marylandica, *Nutt.* Man. i. 1840, 454, fig.—*Gir.* BLI. 1844, 64.—*Gamb.* Journ. Phila. Acad. i. 1847, 37.—*Gosse,* B. Jam. 1847, 148.—*Hoy,* Pr. Phila. Acad. vi. 1853, 311.—*Read,* ibid. 399.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 583.—*Bry.* Pr. Bost. Soc. vi. 1857, 116 (Nova Scotia).—*Bry.* Pr. Bost. Soc. vii. 1859, 110 (Bahamas).—*Brew.* Pr. Bost. Soc. vii. 1860, 309 (Cuba).—*Albrecht,* J. f. O. 1861, 52 (Bahamas).—*Hoy,* Smiths. Rep. for 1864, 1865, 438.

Trichas marylandicus, *Gamb.* Pr. Phila. Acad. iii. 1846, 155 (California).

Oporornis formosa, *S. & S.* Ibis, i. 1859, 10 (Guatemala).—*Scl.* PZS. 1862, 19 (Playa Vicente, Mexico).—*S. & S.* PZS. 1864, 347 (Panama).—*Coues,* Pr. Ess. Inst. v. 1868, 269 (New England).

Fauvette du Kentucky, *V.* l. c. 1823.

Kentucky Warbler, Kentucky Flycatching Warbler, *Authors.*

Hab.—Eastern Province of the United States, especially in the Valley of the Mississippi. North to the Connecticut Valley. West to Kansas and the Indian Territory. South through Mexico and Central America. Cuba. Breeds throughout its United States range. Winters extralimital.

Trichas marilandica, *Bp.* CGL. 1838, 20.—*Aud.* Syn. 1839, 65.—*Aud.* BA. ii. 1841, 78, pl. 102.—*Bp.* CA. i. 1850, 310.—*Henry,* Pr. Phila. Acad. vii. 1855, 309 (New Mexico).—*Putn.* Pr. Ess. Inst. i. 1856, 207.—*Scl.* PZS. 1856, 292 (Mexico).—*Maxim.* J. f. O. 1858, 118.—*Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Trippe,* Pr. Ess. Inst. vi. 1871, 114.
Trichas marilandicus, *Gray,* G. of B. i. 1848, 197.—*Woodh.* Sitgr. Rep. Zuñi, 1853, 71.
Regulus? mystaceus, *Steph.* Shaw's Gen. Zool. xiii. pt. ii. 1826, 232.
Trichas personatus, *Sw.* Zool. Journ. iii. 1827, 167; Philos. Mag. i. 1827, 433; Isis, 1830, 1153; Isis, 1834, 785; Class. B. ii. 1837, 247.—*Vig.* Zool. Voy. Bloss. 1839, 18.—*Denny,* PZS. 1847, 38.—*Pratten,* Tr. Illinois Agric. Soc. i. 1855, 602.
Trichas brachidactylus, *Sw.* Anim. in Menag. 1838, 295.—*Gray,* G. of B. i. 1848, 197.
Sylvia roscoe, *Aud.* OB. i. 1832, 124, pl. 24.—*Peab.* Rep. Orn. Mass. 1839, 313.
Trichas roscoe, *Nutt.* Man. i. 2d ed. 1840, 457.
Trichas delafieldii, *Heerm.* PRRR. x. 1859, 40 (not of *Authors*).
Maryland Yellow-throat, *Edw.* Gl. v. 56, pl. 237.—And of *Authors.*
Avis marylandica, gutture luteo, *Petiv.* "Gaz. pl. 6, f. 1".
Figuier de Mariland, Ficedula marilandica, *Briss.* Orn. iii. 1760, 506, n. 58.
Figuier aux joues noires, *Buff.* Hist. Nat. Ois. v. 292.
Fauvette aux joues noires, *V.* l. c.
Yellow-breast Warbler, *Penn.* AZ. ii. 1785, 399, n. 283.
Yellow-breasted Warbler, *Lath.* Syn. ii. pt. ii. 1783, 438, n. 32; also, var. A, p. 439.
Orange-thighed Warbler, *Penn.* AZ. ii. 1785, 399, n. 284 (PE. 709, f. 2).
Fauvette à poitrine jaune de Louisiane, *Buff.* "v. 162" (PE. 709, f. 2).
Fauvette trichas, *V.* l. c.—*Le Moine,* Ois. Canad. 1861, 193.
Bec-fin trichas, *D'Orb.* l. c.
Black-cheeked Yellow-throat, *Gosse,* l. c.
Black-masked Ground Warbler, *B. B. & R.* l. c.

HAB.—The United States at large, and south through Mexico and Central America. Several of the West Indies, as Cuba, Jamaica, and the Bahamas. Breeds throughout its United States range, and winters from our southern border southward.

CH. SP.—♂ *Olivaceus, fronte lateribusque capitis nigris, cano posticè limbatis; gulâ, pectore, tectricibusque inferioribus alaribus et caudalibus flavis.* ♀ *capite innotato.*

♂, in summer: Upper parts rich olive, inclining to grayish on the head, brightest on the rump. Wings and tail brown, edged with the color of the back. Chin, throat, and breast, with under wing- and tail-coverts, rich yellow. Middle under parts dull whitish, shaded on the sides. A broad black mask on the front and sides of the head, bordered behind by hoary-ash. Bill black; feet flesh-colored. Length, 4¾–5; extent, 6½–6¾; wing, 2; tail rather more.

♀, in summer: Similar to the male; rather smaller; yellow of the under parts paler and more restricted; no black or ashy markings on head, but crown usually with some concealed reddish-brown. Otherwise top and sides of head like back, with some obscure whitishness about the lores and orbits.

Young: Similar to the adult female, but the olive of the upper parts with much of a brownish tinge, the yellow parts buffy, and, in fact, most of the under parts quite buffy.

The adults, in fall and winter, are similar to each other, except in the purer and stronger yellow of the male, as at that season the peculiar black and ashy markings of the head are wanting. Both sexes then resemble the autumnal plumage of the young in the browner shade of the olive and buffiness of the under parts.

ABUNDANT as the Maryland Yellow-throat is in the East, it is scarcely less so in suitable places in the Colorado Basin, though much of that country is too dry and open to be inviting. It is one of the few Warblers that range indifferently across the continent. In Arizona, I found it occasionally about Fort Whipple, where it arrives early in April and remains until October, when it either goes south, or elsewhere seeks less elevated places. Henshaw found it in the thickets of the lowlands in various parts of Colorado and Utah, and more seldom in Arizona; different observers have left their records of its presence in other portions of the same general area. There is no occasion to enlarge upon its habits, as these are much the same under all the varying circumstances in which we find that the bird places itself, and have been repeatedly described with sufficient particularity.

FIG. 40.—Maryland Yellow-throat.

Macgillivray's Warbler

Geothlypis macgillivrayi

Sylvia macgillivrayi, *Aud.* OB. v. 1839, 75, pl. 399, f. 4, 5.

Trichas macgillivrayi, *Aud.* Syn. 1839, 64.—*Aud.* BA. ii. 1841, 74, pl. 100.—*Gray,* G. of B. i. 1848, 197.—*Bp.* CA. i. 1850, 310.—*Maxim.* J. f. O. 1858, 118.

Geothlypis macgillivrayi, *Bd.* BNA. 1858, 244; ed. of 1860, pl. 99, f. 4.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. Birds, 1859, 10.—*Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*Henry,* ibid. 106 (New Mexico).—*Coop. & Suck.* NHWT. 1860, 177.—*Cab.* J. f. O. 1861, 84 (Costa Rica).—*Coues,* Ibis, 2d ser. i. 1865, 163 (Arizona).—*Bd.* Rev. AB. 1865, 227.—*Coues,* Pr. Phila. Acad. xviii. 1866, 70 (Fort Whipple).—*Brown,* Ibis, 2d ser. iv. 1868, 420 (Vancouver).—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*v. Frantz.* J. f. O. 1869, 294 (Costa Rica).—*Coop.* Am. Nat. iii. 1869, 32, 299.—*Coop.* Pr. Cal. Acad. 1870, 75.—*Coop.* B. Cal. i. 1870, 96.—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 463.—*Coues,* Key, 1872, 107.—*Salv.* Ibis, 3d ser. ii. 1872, 149 (monographic).—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713.—*Coop.* Am. Nat. viii. 1874, 16.—*Trippe apud Coues,* BNW. 1874, 232.—*B. B. & R.* NAB. i. 1874, 303, pl. 15, f. 4, 5.—*Hensh.* Rep. Orn. Specs. 1874, 59, 75, 103.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 205.

Geothlypis macgillivrayii, *S. & S.* Ibis, i. 1859, 10 (Guatemala).—*Aiken,* Pr. Bost. Soc. xv. 1872, 197.

Geothlypis macgillivrail, *Scl.* PZS. 1859, 363 (Xalapa); 373 (Oaxaca).

Geothlypis mcGillivrayi, *Coop.* Am. Nat. iii. 1869, 477.

Geothlypis philadelphia *var.* **macgillivrayi,** *Allen,* Bull. MCZ. iii. July, 1872, 175 (Colorado).—*Ridgw.* Am. Journ. Sci. Dec. 1872, 459.—*Ridgw.* Bull. Ess. Inst. v. 1873, 180.—*Allen,* Pr. Bost. Soc. xvii. 1874, 52 (Dakota).—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 10.—*Hensh.* ibid. 42.—*Nelson,* Pr. Bost. Soc. xvii. 1875, 339, 357 (Utah and California).

Geothlypis philadelphia b. macgillivrayi, *Coues,* BNW. 1874, 75.

Sylvia tolmœi, *Towns.* Journ. Phila. Acad. viii. 1839, 149 (read April 2, 1839); also, pp. 153, 159 (read Sept. 10, 1839; the vol. for 1839 not pub. till 1840).

Trichas tolmiei, *Towns.* Narr. 1839, 343.—*Heerm.* Journ. Phila. Acad. ii. 1853, 263.—*Henry,* Pr. Phila. Acad. vii. 1855, 309.

Trichas tolmæi, *Nutt.* Man. i. 2d ed. 1840, 460.
Trichas tolmiei, *Heerm.* PRRR. x. 1859, 40.
Sylvia vegeta, *Licht.* "Mus. Berol." (*cf.* J. f. O. 1861, 84).
Trichas vegeta, *Bp.* CA. i. 1850, 310.
McGillivray's Warbler, McGillivray's Ground Warbler, Tolmie's Ground Warbler, *Authors.*

HAB.—Middle and Western Provinces of the United States, and British Columbia. East to the limit of arboreal vegetation along the Rocky Mountains. South in winter through Mexico to Central America (Guatemala and Costa Rica). Breeds throughout its United States range.

CH. SP.—♂ ♀ *Olivaceus, infrà flavus; capite et collo canoplumbeis, palpebris albis.*

♂ ♀: Upper parts, including exposed surfaces of wings and tail, clear olive-green; below bright yellow, shaded with olive on the sides. Head and neck all around, and throat and fore breast clear ashy, the eyelids white, and the loral region usually dusky, the throat with blackish centres to the feathers, veiled by their gray skirting. Upper mandible blackish; under mandible and feet flesh-colored or pale yellowish. Length, 5¼; extent, 7¾–8; wing and tail each about 2¼.

Unlike the species of the *G. trichas* group, the sexes in the present case are nearly alike, the chief difference between the adults being in the paler and more hoary ash of the throat of the ♀, without any of the concealed black. In autumn, both sexes have the head more or less glossed with an extension of the olive of the back.

This bird differs chiefly from *G. philadelphia,** its Eastern representative,

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***Geothlypis philadelphia.—Mourning Warbler.**

Sylvia philadelphia, *Wils.* AO. ii. 1810, 101, pl. 14, f. 6.—*V.* Ency. Méth. ii. 1823, 449, n. 105.—*Bp.* Journ. Phila. Acad. iv. 1824, 189.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 85.—*Nutt.* Man. i. 1832, 404.—*Brew.* Journ. Bost. Soc. i. 1837, 436.—*Aud.* OB. v. 1839, 78.—*Peab.* Rep. Orn. Mass. 1839, 312.—*Thomps.* N. H. Vermont, 1853, App. 23.

Trichas philadelphia, *Jard.* "ed. Wils. 1832".—*Rich.* Rep. Brit. Assoc. Adv. Sci. 1836, 1837, 172.—*Bp.* CGL. 1838, 20 (includes *Oporornis agilis*).—*Aud.* Syn. 1839, 65.—*Aud.* BA. ii. 1841, 76, pl. 101.—*Nutt.* Man. i. 1840, 459.—*Gir.* BLI. 1844, 65.—*Gray,* G. of B. i. 1848, 197.—*Bp.* CA. i. 1850, 310.—*Cabot,* Naum. ii. Heft iii. 1852, 66 (Lake Superior).—*Hoy,* Pr. Phila. Acad. vi. 1853, 312 (Wisconsin).—*Reinh.* Ved. Meddel. for 1853, 1854, 73 (Greenland).—*Reinh.* J. f. O. 1854, 427 (Greenland).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 583.—*Putn.* Pr. Ess. Inst. i. 1856, 226.—*Reinh.* Ibis, iii. 1861, 6 (Greenland).—*Trippe,* Pr. Ess. Inst. vi. 1871, 114.

Trichas philadelphica, *Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Hoy,* Smiths. Rep. for 1864, 1865, 438 (Missouri).

Geothlypis philadelphia, *Bd.* BNA. 1858, 243; ed. of 1860, pl. 79, f. 3.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 373.—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 322 (New Granada).—*Scl.* Cat. AB. 1861, 27 (Orizaba).—*Allen,* Pr. Ess. Inst. iv. 1864, 59 (Massachusetts).—*Bd.* Rev. AB. 1865, 226.—*Dress.* Ibis, 2d ser. i. 1865, 476 (Texas).—*Hamlin,* Rep. Sec'y Maine Board Agric. 1865 (Waterville, Me., breeding).—*McIlwr.* Pr. Ess. Inst. v. 1866, 85 (Canada West).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 283.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 94 (Costa Rica).—*Coues,* Pr. Ess. Inst. v. 1868, 269.—*Trippe,* Am. Nat. ii. 1868, 175.—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Laredo, Tex.).—*Coues,* Pr. Bost. Soc. xii. 1868, 110 (South Carolina).—*v. Frantz.* J. f. O. 1869, 294 (Costa Rica).—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.—*Mayn.* Guide, 1870, 99 (Massachusetts).—*Wyatt,* Ibis, 3d ser. i. 1871, 322 (Ocaña).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 362 (New Hampshire and Maine).—*Allen,* Bull. MCZ. iii. 1872, 126 (Kansas).—*Salv.* Ibis, 3d ser. ii. 1872, 149 (monographic).—*Coues,* Key, 1872, 107.—*Ridgw.* Am. Journ. Sci. 1872, 459.—

in having white eyelids, and in never showing a decided black patch on the breast, which is conspicuous in highly plumaged males of the other form. Whether we are to regard it as a good species or as a geographical race, seems to have settled into a matter of individual preference in nomenclature.

IN the United States, the two species or varieties of the Mourning Warbler are separated by a considerable interval—that of the treeless Plains, where neither occurs. The same is the case, for aught we have learned to the contrary, throughout Mexico, where the *philadelphia* has not been found. In Central America, however, the two come together, and both are recorded from Costa Rica. Throughout the wooded and watered regions of the West, from the eastern slopes of the Rockies quite to the Pacific, and north at least to British Columbia, Macgillivray's Warbler is sometimes as common as the Maryland Yellow-throat is in the East, and decidedly outnumbers the latter in its own region. It appears to breed fairly over the whole of this great extent of country, wherever suitable shrubbery and underbrush grow. I think it has not been shown to winter over our border, although it may very possibly do so in the warmer parts of Southern California, as suggested by Dr. Cooper, and in corresponding localities in Arizona and New Mexico. It has been traced through Mexico to Costa Rica and Guatemala, where Mr. Salvin found that it was a common bird in certain districts. I observed its arrival about Fort Whipple, where it is a not very common summer resident, during the latter part of April, and occasionally noticed it until late in September. Henshaw has seen it in the same Territory and in each of the three neighboring ones, and found that any patch of shrubbery or tangled growth of bushes may be selected as a summer home by one or more pairs, from the lower valleys up to an altitude of about 9,000 feet. In Eastern Colorado,

Ridgw. Am. Nat. vii. 1873, 199.—*Coues*, BNW. 1874, 75.—*B. B. & R.* NAB. i. 1874, 301, pl. 15, f. 6.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Gentry*, Life-Hist. i. 1876, 157.—*Minot*, B. N. Engl. 1877, 87.—*Merr.* Trans. Conn. Acad. iv. 1877, 23.

Fauvette petit-deuil, *V.* l. c. 1823.

Mourning Warbler, Mourning Ground-warbler, *Authors.*

HAB.—Eastern Province of the United States and British America, casually to Greenland. West to Kansas, Missouri, and Dakota. South to Costa Rica and New Granada, but no Mexican nor West Indian quotations. No United States wintering record. Breeds in the northern portions of its habitat, as New England, and very abundantly in Minnesota and Eastern Dakota. Common in the Mississippi Valley, but rare along the Atlantic States. (See "Birds of the Northwest", p. 75, for other items.)

Trippe noted its arrival in May, and its disappearance in September or even in August; it is there common, he states, up to about the altitude just given, and closely resembles the Mourning Warbler in its habits.

I am myself not very familiar with the traits of this species, excepting one, namely, its timidity and love of seclusion during the breeding season, for I have never seen it under other circumstances, and its shyness stands greatly in the way of close acquaintance. I usually had to wait when I wanted to secure a specimen until the bird had recovered from the first alarm, which sent it into the closest cover; then, watching narrowly, I might see it again, creeping furtively about to get a better look at the cause of the trouble, and perhaps to scold about it. I do not remember to have ever seen a Macgillivray's Warbler more than a few feet from the ground, nor elsewhere than in thick brush; but the Mourning Warbler, which I once closely studied in June, along the Red River of the North, where it was breeding abundantly, has a habit of clambering up quite high trees to forage and sing while its mate is nestling below. I scarcely think, however, that there is any material difference in the habits of the two species. As to the song of Macgillivray's Warbler, I have nothing to say, for if I ever heard it, I have forgotten what it is like, and I am writing far away from any chance of refreshing my memory. Nearly all that has ever been said on this score, however, lies before me on the table as I write. Townsend, who discovered the bird on the Columbia River, says it warbles a very sprightly and pleasant little song, raising its head until its bill is almost vertical, swelling its throat in the manner of its relatives. Nuttall, whose ear for bird music was certainly unlike any one's else, is more elaborate in his description. He speaks of a "loud snapping clink" which is uttered when the bird is skulking off, shy and jealous; he likens another note to the "hurried rattling sound of *Turdus aurocapillus*"; another male "called out at intervals *vish vishtyu*, changing to *vit vit vit vityu*"; another still "had a call of *visht visht, visht e visht t'shew*"—and so forth. One late writer alludes to a "complete loss of musical power" that Macgillivray's Warbler has suffered in comparison with the Mourning Warbler; another likens its notes to those of the Maryland Yellow-throat; and another writes of its "sweet notes" and of the "warbling melody" occasionally poured forth, "almost unrivalled in sweetness by that of any other of the forest songsters". Evidently

the differences of musical critics are as hard to reconcile in some cases as in certain others with which we are all familiar; but I have no doubt the bird sings very well indeed.

Many nests of this bird have come to the notice of naturalists. They are usually built on the ground in close covert, though said to be sometimes placed in a bush a foot or so high—in one instance, given by Nuttall, "near the ground, in the dead mossy limbs of a fallen oak, and further partly hidden by a long tuft of *Usnea*". The shape differs much according to the situation, the ground-built specimens being quite broad and flattish, not more than half as high as wide, with a shallow cavity, and quite uniformly thick walls. Those placed in bushes were more cup-like. Some have been described as consisting almost entirely of mosses; others, among them one I examined, are built of various soft, fibrous materials, especially bark-strips and frayed-out plant-stems, with fine grasses, mostly circularly arranged, and lined with slender rootlets. The eggs, four or five in number, are white, doubtless with a flesh-tint when fresh, and are variously blotched, in a wholly irregular manner, with very dark brown, almost blackish; and further spotted and smirched with several shades of lighter, more reddish-brown, together with the usual shell-markings of undefinable neutral tint. Some of the blotches, especially the darker ones, are remarkably large; and the whole aspect of the egg is different from that usually seen in this family, where fine speckling with reddish is the rule. The eggs I describe were collected by Mr. Ridgway in Nevada, and I presume there is no question of their identification. The extremes measure 0.70×0.50 and 0.65×0.52. As the bird ranges so widely in the breeding season, the period of laying must vary; but June appears to be the usual time. We are not informed whether more than one brood may be reared by the same pair during a summer. Fully fledged birds have been seen by the 21st of July.

Genus ICTERIA Vieillot

Icteria, *Vieill.* OAS. i. 1807, pp. iii. and 85. (Type *Muscicapa viridis* Gm.)
Jcteria, *Cab.* MH. i. 1850, 63, and some other German writers.
Peteria, *Hoy,* Proc. Phila. Acad. 1853, 309. (Typographical error.)

CHARS.—Bill stout, high at the base (higher than broad at nostrils), thence compressed; unnotched, unbristled, with much curved culmen and commissure. Frontal feathers reaching the nostrils, which are subcircular and scaled. Wings much rounded, shorter or not longer than the graduated tail. Tarsus

partly booted, longer than middle toe; feet stout. Inner toe cleft to the degree usually seen in this family. Of largest size for this family. Form stout. Coloration simple, chiefly olive, yellow and white. Nest in bushes. Eggs white, spotted.

This is a genus which was usually assigned to the neighborhood of the Vireos and Shrikes until Baird referred it to *Sylvicolidæ*, and some of the leading systematists retain it in the former association. The structure of the wing and foot, however, is rather Sylvicoline than Vireonine, and may serve to turn the balance in favor of the present assignment. There is no very closely related North American genus; but *Granatellus*,* from the warmer parts of America, and the Cuban *Teretristis*, are near extralimital allies.

Only one species of *Icteria* can be regarded as established among the several indicated by authors; and as the habits of the two recognized races are the same, a sketch of the genus may include those notices that will enable me to confine the account of the Western race to its specialties.

Chats being abundant birds, conspicuous for their bright coloring and the singularity of their habits, they early attracted attention. Catesby may have been the first to give a detailed account, with a figure; though I do not suppose that earlier reference to the Eastern species is not to be found. His notice is the basis, wholly or in part, of many subsequent ones, and is especially noteworthy in the fact that upon it is primarily grounded the original Linnæan name of the bird, *Turdus virens*, the latter half of this term having been lately and, I think, properly revived by Baird, though the specific name *viridis*, from Gmelin's *Muscicapa viridis*, has been oftener employed. Bartram and Wilson both bestowed generic and specific names of their own; and Vieillot renamed the bird in 1807, inventing the two terms of his new designation. In later times, there have been other and less unquestionable names; for the Mexican bird was renamed by both Lichtenstein and Bonaparte. It is somewhat uncertain to which race of the species these names apply; but it is most probable that they indicate simply the resident Mexican indi-

FIG. 41.—Yellow-breasted Chat, natural size.

* For monographic sketch, cf. *Bd.* Rev. AB. 1865, 230; *Scl.* PZS. 1864, 607.

viduals of true *virens*, rather than the grayer and longer-tailed form later called *longicauda* by Lawrence.

The common Chat is a migratory bird of general diffusion during the movement and in the breeding season throughout the Eastern United States, as far north at least as Massachusetts and Dakota, though it is not abundant north of the Middle States. Wherever Chats may be found, they are of this species, excepting in the Middle and Western Provinces. No Chats are known in the West Indies; but the birds migrate in the fall beyond our limits, through Mexico and into Central America. On their return, they reach the Middle districts usually the latter part of April, and complete their migration by the early part of the month following; they remain until about the middle of September, when, after rearing their one or two broods, they betake themselves away. It is difficult to observe their arrival with precision, unless the collector is carefully on the watch for them, for they come furtively, and for some little time keep most sedulously concealed in their favorite retreats amidst dense shrubbery. Such period of concealment probably corresponds to the interval between the arrival of the males and the following after of their more dilatory mates, which may be several days or even a week. Their manner of migration is somewhat uncertain; we do not know that they ever make long-continued flights overhead, and rather presume that they come skulking through the bushes. But the fact that their ordinary flight is wayward, desultory, and never long-continued, is no proof that the emergency of the migration does not develop different and much better sustained powers of the wing.

However this may be, no sooner is the ardor of occasion stimulated by the presence of the females than the gay and gaudy Chats develop those eccentricities that make them famous. They grow too restless to abide the covert they have chosen for their home, and are seen incessantly in motion, flitting with jerky movement from one bush and brier-patch to another, giving vent to long-pent emotions in the oddest notes imaginable. Such a medley of whistling, chuckling, barking, and mewing sounds proceeds from no other bird, unless it be the Mocking-bird itself, to whom all possibilities of song are open. During such performances, the Chats seem sedulous to keep concealed, displaying ingenuity and perversity in thwarting our best efforts to catch them at their tricks. The notes, in all their infinite

variety, come now from this and now from that spot in the bushes, shifting from point to point as we peer eagerly into the tangled underbrush to catch a glimpse of the tantalizing musician. Such restlessness, and all this variation in the rendering, have much the effect of ventriloquism, and we have not seldom to acknowledge that the Chat has fairly beaten us. But his coloring is brilliant; he has, moreover, a fancy to return again to some particular spot already chosen as his stage; so that if we discover it, and keep so still as not to cause the bird anxiety, nor yet to rouse his ire, we shall most likely see him take his stand again to swell his golden throat afresh with the fantasy of song.

His nuptial song, I should observe, is something very different from the medley of sounds, not all of which are pleasing, that are heard when each Chat, as one performer in the orchestra, first tunes his curious pipe. Such prelude, after several days' essay, is changed into the rich, voluminous ode with which the bird inaugurates a new order of events, in bursts of almost startling eloquence and fervor. For the nesting-place is fixed upon, the fabric hastens to completion; and the exultant bird, no longer constrained to the lowliness of the coverts, mounts buoyantly from bough to bough of some tall sentinel that guards the leafy undergrowth, to sound his exultation from the very tree-top. Yet once more: the nest now bears its precious burden; the brooding bird assumes her patient place, and presses down her golden breast upon her hopes. Then this strange bird goes fairly wild with joy; he spurns the ground, the favorite singing-post no longer bids him welcome, he rises on the wing, and in mid-air above the nest, with fluttering pinions, down-stretched legs, and open beak, he poises, hovers, and performs a thousand antics in the sheer abandon of his eccentricity.

Such are the Chat's most characteristic actions during the heyday of his life; and when we see him cutting such capers, we may be sure the nest is not far off. It is one of the birds' nests most easily found—as easily as a Catbird's or a Thrasher's. You can hardly miss it if you go carefully through the brier-patch or blackberry field, the tangle of smilax and grape-vine, or the old pasture grown up to oak bushes. It is a rather bulky and decidedly primitive affair, set in the bush so low you may usually look down into it, and made up of withered leaves, bark-strips, rootlets, and hay—not unlike a Catbird's,—smaller

and deeper than a Thrasher's, and perhaps more compact than either of these. Besides, you may know it by the eggs, which are more globular, brilliantly white or pink-blushed, prettily speckled all over with rich reddish-brown and some neutral-tint spots, and measuring about nine-tenths of an inch long by two-thirds in diameter—the Catbird's eggs are emerald-green, while the Thrasher's are elongated and speckled in a different way. The eggs are commonly four or five in number; the young are said to hatch in eleven or twelve days, and to remain in the nest only about as many more. Such a nest and eggs as I have described may be found during the latter part of May and in June, in the Middle districts; somewhat earlier and at subsequent intervals during the rest of the summer, at least in the more southerly regions the bird inhabits. In Pennsylvania, and thence northward, one brood each season is the rule, perhaps without exception.

Notwithstanding its vivacity and ardor, the Chat seems rather a delicately organized bird, susceptible to cold; and it consequently leaves us rather early in the fall. As to its food, we remark that it is insectivorous, like all of its family, but that it feeds much upon small soft fruits, such as strawberries, blackberries, and huckleberries. Several stomachs of the bird which were examined by Mr. Gentry with reference to this matter contained coleopterous insects of numerous kinds, butterflies and moths with their larvæ, spiders, ants, and other insects.

The Western Yellow-breasted Chat

Icteria virens longicauda

a. virens

Turdus virens, *L.* SN. i. 1758, 10th ed. 171, n. 16 (Catesby, i. 50).

Icteria virens, *Bd.* Rev. AB. 1865, 228.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 95 (Costa Rica).—*Sumich.* Mem. Bost. Soc. i. 1869, 54 (Vera Cruz).—*v. Frantz.* J. f. O. 1869, 294 (Costa Rica).—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200 (Yucatan).—*Turnb.* B. E. Pa. 1869, 23; Phila. ed. 16.—*? Allen,* Bull. MCZ. iii. 1872, 175.—*Coues,* Key, 1872, 108, f. 48.—*Scott,* Pr. Bost. Soc. xv. 1872, 222.—*Allen,* Am. Nat. vi. 1872, 265.—*Purdie,* Am. Nat. vii. 1873, 692, 693.—*Ridgw.* Am. Nat. vii. 1873, 198.—*Allen,* Pr. Bost. Soc. xvii. 1874, 52 (Dakota and Montana).—*Coues,* BNW. 1874,77.—*B. B. & R.* NAB. i. 1874, 307, fig. pl. 15, f. 12.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Gentry,* Life-Hist. i. 1876, 160.—*Minot,* B. N. Engl. 1877, 132.—*Merr.* Tr. Conn. Acad. 1877, 24.

Muscicapa viridis, *Gm.* SN. i. 1788, 936, n. 35 (Briss. and Cates.).—*Lath.* IO. ii. 1790, 482, n. 58.—*Turt.* SN. i. 1806, 574.—*Steph.* Gen. Zool. x. 1817, 356.

Icteria viridis, *Bp.* Journ. Phila. Acad. iv. 1825, 252.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 69.—*Nutt.* Man. i. 1832, 299.—*Aud.* OB. ii. 1834, 223; v. 1839, 433; pl. 137.—*Bp.* PZS. 1837, 111 (Mexico).—*Bp.* CGL. 1838, 25.—*Peab.* Rep. Orn. Mass. 1839, 297 (occasional).—*Aud.* Syn. 1839, 163.—*Nutt.* Man. 2d ed. 1840, 339.—*Aud.* BA. iv. 1842, 160, pl. 244.—*Gir.* BLI. 1844, 162.—*Bp.* CA. i. 1850, 331.—*Read,* ibid. 397 (Ohio).—*? Woodh.* Sitgr. Rep. Zuñi,

1853, 73.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 582.—*Pratten*, ibid. 603.—*Maxim.* J. f. O. 1858, 122.—*Bd.* BNA. 1858, 248.—*Cab.* J. f. O. 1860, 403 (Costa Rica).—*Barn.* Smiths. Rep. for 1860, 1861, 435.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 406.—*Allen*, Pr. Ess. Inst. iv. 1864, 59.—*Scl.* PZS. 1864, 173 (City of Mexico).—*Hoy*, Smiths. Rep. for 1864, 1865, 437.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*Coues*, Pr. Bost. Soc. xii. 1868, 110.—*Coues*, Pr. Ess. Inst. v. 1868, 270.—*Jackson*, Am. Nat. ii. 1868, 490.—*Coop.* Am. Nat. iii. 1869, 295, 477, 479 (Dakota).—*Abbott*, Am. Nat. iv. 1870, 540.—*S. & S.* PZS. 1870, 836 (Honduras).—*Trippe*, Pr. Bost. Soc. xv. 1873, 234.

Icteria viridis, *Cab.* MH. i. 1850, 63.

Peteria viridis, *Hoy*, Pr. Phila. Acad. vi. 1853, 309 (Wisconsin).

Garrulus australis, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 290.

Motacilla trochilus, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 302 (*nec auct.*).

Icteria dumicola, *V.* OAS. i. 1807, 85, pl. 55.—*V.* Ency. Méth. ii. 1823, 702.—*V.* Gal. Ois. i. 1834, 119, pl. 85.

——— luteus, "*Sparrm.*" (*fide* Gray).

Pipra polyglotta, *Wils.* AO. i. 1808, 90, pl. 6, f. 1.—*Bp.* Journ. Phila. Acad. iv. 1825, 251.

Tanagra auricollis, *Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 57.

Icteria auricollis, *Bp.* CA. i. 1850, 331.—*Bp.* Compt. Rend. 1854, 380, 382.

Icteria velasquezi, *Bp.* PZS. 1837, 117 (Guatemala).—*Bp.* CA. i. 1850, 331.—*Scl.* PZS. 1856, 298 (Mexico).—*Scl.* PZS. 1859, 363 (Xalapa), 375 (Oaxaca).—*S. & S.* Ibis, i. 1859, 12 (Guatemala).

Merle verd de la Caroline, *Buff.* "Hist. Nat. Ois. iii. 396".

Turdus pectore luteo, *Klein.* "Av. 69, n. 26".

Merida viridis carolinensis, *Briss.* Orn. ii. 1760, 315, n. 55.

Yellow-breasted Chat, Oenanthe americana pectore luteo, *Cates.* Car. i. 1771, 50, pl. 50.

Chattering Flycatcher, *Penn.* AZ. ii. 1785, 385, n. 266.—*Lath.* Syn. ii. pt. i. 1783, 350, n. 48.

Ictérie dumicole, *V.* l. c.

Chat, Yellow-breasted Chat, Yellow-breasted Icteria, *Authors.*—*Lyman*, Pr. Bost. Soc. 1851, 67 (New England, breeding).

b. longicauda

Icteria viridis, *Towns.* Journ. Phila. Acad. viii. 1839, 153 (Northwestern United States).—*Gamb.* Pr. Phila. Acad. iii. 1847, 157 (California).—*Gamb.* Journ. Phila. Acad. i. 1847, 44 (California).—*Heerm.* Journ. Phila. Acad. ii. 1853, 269 (California).—*Henry*, Pr. Phila. Acad. vii. 1855, 313 (New Mexico).—*Henry*, Pr. Phila. Acad. xi. 1859, 106 (New Mexico).

Icteria velasquezii, *Bd.* Stansb. Rep. GSL. 1852, 328 (California).

Icteria longicauda, *Lawr.* Ann. Lyc. N. Y. vi. 1853, 4 (California).—*Newb.* PRRR. vi. 1857, 81.—*Bd.* BNA. 1858, 249; ed. of 1860, pl. 34, f. 2.—*Xant.* Pr. Phila. Acad. 1859, 191 (California).—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 10.—*Heerm.* PRRR. x. 1859, 55.—*Scl.* Cat. AB. 1861, 42.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 160.—*Bd* Rev. AB. 1865, 230.—*Coues*, Ibis, 2d ser. i. 1865, 163.—*Coues*, Pr. Phila. Acad. xviii. 1866, 71.—*Coues*, Pr. Phila. Acad. xx. 1868, 83.—*Coop.* Pr. Cal. Acad. 1870, 75.—*Coop.* B. Cal. i. 1870, 98.—*Finsch*, Abhand. Bremen, 1870, 331 (Mazatlan).—*Coop.* Am. Nat. iii. 1869, 479.—*Aiken*, Pr. Bost. Soc. 1872, 197.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 674, 713.

Icteria virens *var.* **longicauda,** *Coues*, Key, 1872, 108.—*B. B. & R.* NAB. i. 1874, 309.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 10.—*Hensh.* ibid. 1874, 42, 103.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 206.

Icteria virens b. longicauda, *Coues*, BNW. 1874, 77.

HAB.—Middle and Western Provinces of the United States; Lower California, and Western Mexico.

CH. SP.— ♂ ♀ *Griseo-olivacea, infrà flavo et albo dimidiata; loris nigris, strigâ maxillari et superciliari, necnon palpebris, albis; rostro nigro-plumbeo.*

♂ ♀: Entire upper parts, including exposed surfaces of the wings and tail, grayish-olive. Quills of the wings and tail fuscous. Fore half of body

below, including lining of the wings, rich yellow; hinder half white, shaded with gray on the sides. Loral region black; a sharp maxillary line, another from nostril over the eye, and the under eyelid, white. Bill blackish-plumbeous; feet plumbeous. Length, 7¼ or more; extent about 10; wing, 3; tail, 3⅛.

There is very little difference with sex, age, or season in this bird, excepting in the purity and intensity of the tints. The yellow of the breast is sometimes heightened to orange, or may show golden as usual, with stains of intense orange here and there. Immature specimens have the under mandible light plumbeous or plumbeous-white. In very young birds, the yellow may appear only as slashing in the white, and the peculiar markings of the side of the head are defective.

This form, in its typical manifestation, such as is presented in the Coloradan region, is decidedly different from true *virens* in the shade of the upper parts—quite grayish instead of pure olive-green. But in both cases the shade is liable to variation. In the dullest colored Coloradan birds there is scarcely a tinge of olive in the gray of the upper parts. The yellow of the breast is as rich, however, as that of the Eastern representatives. As in the cases of so many other birds from the same region, the tail averages longer than that of Eastern representatives of the same species.

THE best examples of the Western or Long-tailed Chat come from the arid regions of the Great Basin, and the Colorado watershed in general, the bird being there usually duller colored than it is about the confines of its range. Birds more or less properly referable to this form, however, occur throughout the Middle and Western Provinces of the United States, and also in Western Mexico, though the ordinary Mexican bird is rather *I. virens*. Owing to the remarkable surface-irregularities of the region this race inhabits, its movements can scarcely be traced with the precision we have acquired in noting the passages of the Eastern relative, and can only say in general terms that the movements of the two are correspondent. We hear of arrivals in Southern California, Arizona, and New Mexico by the middle or latter part of April; of nests within a month subsequently; and of departures in September. Such dates correspond with my observations at Fort Whipple, and may be used for calculation. In these latitudes, it ascends mountains probably not higher than about 9,000 feet, and is generally distributed at all lower levels. It is said, doubtless rightly, to extend to the Columbia and Upper Missouri region, but it is certainly less abundant in the northerly portions of its range than in the latitudes of Colorado, Utah, Nevada, and southward. Our information respecting its dispersion in winter is deficient; one author ascribes a winter range extending to the vicinity of Sacramento, California, but it may be doubted that any of these

birds winter much if any over our Mexican border. The full extent of their dispersion in Western Mexico remains to be ascertained, our advices from that country, excepting Lower California, being altogether insufficient. I saw nothing during my acquaintance with the bird to indicate any peculiarity of character or habits in comparison with its Eastern congener, and the experience of others is to the same effect.

Genus MYIODIOCTES Audubon

Wilsonia, *Bp.* CGL. 1838, 23. (Preoccupied in botany; used also in entomology.)
Myiodioctes, *Aud.* Syn. 1839, 48. (Type *Motacilla mitrata* Gm.)—*Bd.* BNA. 1858, 291.—*Bd.* Rev. AB. 1865, 238.—*B. B. & R.* NAB. i. 1874, 313.
Myioctonus, *Cab.* MH. i. 1850, 18. (Same type.)

CHARS.—Bill Muscicapine, though with the lateral outlines a little concave, broad and depressed at the base, with many obvious rictal bristles reaching decidedly beyond the nostrils; culmen and commissure nearly straight. Wings pointed, as in most *Sylvicolidæ*, longer than the tail, the 1st quill longer than the 5th, the 3d equalling or exceeding the 4th. Tail narrow, even or little rounded. Middle toe without claw about three-fifths as long as the tarsus. Coloration indeterminate. Tail unmarked, or with white blotches as in *Dendræca*. No red or flame-color; always yellow below.

This genus comprehends three or four species, well distinguished by the development of the rictal bristles and the depressed shape of the bill, though the Muscicapine characters are not pushed to the extreme seen in *Setophaga*. The tail is narrow, lacking the fan-shaped contour of that of *Setophaga*, and the feet are stouter, with longer toes. In *Cardellina*, a near ally, the bill is narrow and conoidal, somewhat Parine in appearance, with curved culmen. In *Basileuterus*, and in fact in all the extralimital forms of the Flycatching Warblers, the wing is rounded, with the 1st quill shorter than the 5th.

All the recognized species of *Myiodioctes* are natives of the United States; only one, however, is known to occur in the Colorado Valley. The others are as follows:—

Myiodioctes canadensis.—Canadian Flycatching Warbler.

Muscicapa canadensis, *L.* SN. i. 1766, 327, n. 13 (Briss. ii. 406, pl. 39, f. 4).—*Gm.* SN. i. 1788, 937, n. 13.—*Turt.* SN. i. 1806, 575.—*Lath.* IO. ii. 1790, 484, n. 65.—*Wils.* AO. iii. 1811, 100, pl. 26, f. 2.—*Steph.* Gen. Zool. x. 1817, 350.—*V.* Ency. Méth. ii. 1823, 810.—*Bp.* Journ. Phila. Acad. iv. 1824, 178.—*Aud.* OB. ii. 1834, 17, pl. 103.—*Brew.* Journ. Bost. Soc. i. 1837, 436.—*Peab.* Rep. Orn. Mass. 1839, 297.—*Thomps.* Vermont, 1853, 77.
Setophaga canadensis, "*Sw.*"—*Jard.* "ed. Wils. 1832".—*Rich.* Rep. Brit. Assoc. for 1836, 1837, —.—*Gray,* "G. of B."—*Cabot,* Naum. ii. Heft iii. 1852, 66.—*Hoy,* Pr. Phila. Acad. vi. 1853. 309.

Myiodioctes canadensis, *Aud.* Syn. 1839, 49.—*Aud.* BA. ii. 1841, 14, pl. 72.—*Scl.* PZS. 1854, 111 (Quijos).—*Scl.* PZS. 1855, 143 (Bogotá).—*Putn.* Pr. Ess. Inst. i. 1856, 206 (Massachusetts, in summer).—*Bry.* Pr. Bost. Soc. vi. 1857, 116 (Nova Scotia).—*Scl.* PZS. 1858, 64 (Rio Napo); 451 (Ecuador).—*Bd.* BNA. 1858, 294.—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*Willis,* Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 409.—*Verr.* Pr. Ess. Inst. iii. 1862, 147.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Lawr.* Ann. Lyc. N. Y. vii. 1862, 468 (New Granada).—*Blak.* Ibis. v. 1863, 63 (Saskatchewan).—*Dress.* Ibis, 2d ser. i. 1865, 478 (Texas).—*Bd.* Rev. AB. 1865, 239.—*McIlwr.* Pr. Ess. Inst. v. 1866, 86.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 95 (Costa Rica).—*Trippe,* Am. Nat. ii. 1868, 176.—*Coues,* Pr. Bost. Soc. xii. 1868, 111.—*Coues,* Pr. Ess. Inst. v. 1868, 274.—*v. Frantz.* J. f. O. 1869, 294 (Costa Rica).—*Turnb.* B. E. Pa. 1869, 261; Phila. ed. 19.—*Cope,* Am. Nat. iv. 1870, 395, 396.—*Mayn.* Guide, 1870, 105.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 369.—*Coues,* Key, 1872, 109, f. 51.—*Packard,* Am. Nat. viii. 1874, 271.—*B. B. & R.* NAB. i. 1874, 320, pl. 16, f. 6.—*Coues,* BNA. 1874, 80.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Gentry,* Life-Hist. i. 1876, 169.—*Minot,* B. N. Engl. 1877, 127.

Euthlypis canadensis, *Cab.* MH. i. 1850, 18 (not type).—*Cab.* J. f. O. 1863, 326 (Costa Rica).—*Allen,* Pr. Ess. Inst. iv. 1864, 65.

Sylvia pardalina, *Bp.* Journ. Phila. Acad. iv. 1824, 179.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 79.—*Nutt.* Man. i. 1832, 372.—*Linsley,* Am. Journ. Sci. xliv. 1843, 256.—*Thomps.* Vermont, 1853, App. 23.

Fig. 42.—Canadian Flycatching Warbler, natural size.

Sylvicola pardalina, *Bp.* CGL. 1838, 22.—*Read,* Pr. Phila. Acad. vi. 1853, 398.—*Brew.* Pr. Bost. Soc. vi. 1856, 5 (nest and eggs).

Myiodioctes pardalina, *Bp.* CA. i. 1850, 315.

Myodioctes pardalina, *Pratten,* Tr. Illinois Agric. Soc. 1855, 601.

Muscicapa bonapartii, *Aud.* OB. i. 1831, 27, pl. 5 (young).

Setophaga bonapartii, *Sw. & Rich.* Fn. Bor. Am. ii. 1831, 225, pl. 47.—*Rich.* Rep. Brit. Assoc. for 1836, 1837, 172.

Wilsonia bonapartii, *Bp.* CGL. 1838, 23.

Myiodioctes bonapartii, *Aud.* Syn. 1839, 49.—*Aud.* BA. ii. 1841, 17, pl. 73.—*Bd.* BNA. 1858, 295.

Sylvania bonapartii, *Nutt.* Man. i. 2d ed. 1840, 332.

Setophaga nigro-cincta, *Lafres.* Rev. Zool. 1843, 292; 1844, 79.

Gobe-mouche cendré de Canada, Muscicapa canadensis cinerea, *Briss.* Orn. ii. 1760, 406, n. 25, pl. 39, f. 4 (descr. orig.; Canada).

Canada Flycatcher, *Lath.* Syn. ii. pt. i. 1783, 354, n. 5.—*Penn.* AZ. ii. 1785, 388, n. 273.

Moucherolle du Canada, *Le Moine,* Ois. Canad. 1861, 163.

Canadian Flycatching Warbler, Bonaparte's Flycatching Warbler, Spotted Flycatcher, *Authors.*

Hab.—Eastern North America and the British Provinces. West only to the edge of the Plains. South through Mexico and Central America to Ecuador. No West Indian record. Breeds from the Middle States occasionally, from the Northern States regularly, northward; its precise limits not ascertained, but perhaps coinciding with limit of trees (lat. 54° N., *Richardson*). Winters entirely beyond the United States. Abundant in the Atlantic States during the migrations.

Myiodioctes mitratus.—Hooded Flycatching Warbler.

Motacilla mitrata, *Gm.* SN. i. 1788, 977, n. 128 (Briss. iii. 578; Buff. v. 452, PE. 666, f. 2, &c.).—*Turt.* SN. i. 1806, 601.—*Less.* Tr. Orn. 1831, 418.

Sylvia mitrata, *Lath.* IO. ii. 1790, 528, n. 71.—*V.* OAS. ii. 1807, 23, pl. 77.—*V.* Nouv. Dict. d'Hist. Nat. xi. 1817, 203.—*Bp.* Journ. Phila. Acad. iv. 1824, 178.—*Pp.* Ann. Lyc. N. Y. ii. 1828, 79.—*Nutt.* Man. i. 1832, 373.—*Aud.* OB. ii. 1834, 68, pl. 60.

Setophaga mitrata, *Jard.* "ed. Wils. 1832".—*Gray,* "G. of B."—*Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.—*D'Orb.* Ois. Cuba, 1839, 89.—*Hoy,* Pr. Phila. Acad. vi. 1853, 309 (Wisconsin).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).

Wilsonia mitrata, *Bp.* CGL. 1838, 23.—*Allen,* Pr. Ess. Inst. iv. 1864, 83 (Massachusetts).—*Allen,* Mem. Bost. Soc. i. 1868, 516.—*Allen,* Bull. MCZ. iii. 1872, 175 (Kansas).—*Scott,* Pr. Bost. Soc. xv. 1872, 223 (West Virginia, breeding).

Sylvania mitrata, *Nutt.* Man. i. 2d ed. 1840, 333.—*Woodh.* Sitgr. Rep. Zuñi, 1853, 69.—*Read,* Pr. Phila. Acad. vi. 1853, 397.

Myiodioctes mitrata, *Aud.* BA. ii. 1841, 12, pl. 71.—*Bp.* CA. i. 1850, 315.

Myiodioctes mitratus, *Aud.* Syn. 1839, 48.—*Gir.* BLI. 1844, 47.—*Scl.* PZS. 1856, 291 (Cordova).—*Bd.* BNA. 1858, 292.—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*v. Martens,* J. f. O. 1859, 212 (Bermudas).—*Bland,* Smiths. Rep. for 1858, 1859, 287 (Bermudas).—*Taylor,* Ibis, ii. 1860, 110 (Honduras).—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436 (Pennsylvania).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 364.—*S. & S.* PZS. 1864, 347 (Panama).—*Samuels,* Orn. and Ool. N. E. 245 (Connecticut).—*Sam.* Cat. B. Mass. 1864, 7 (Massachusetts?).—*Bd.* Rev. AB. 1865, 239.—*Dress.* Ibis, 2d ser. i. 1865, 478 (San Antonio).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 284.—*Trippe,* Am. Nat. ii. 1868, 178.—*Coues,* Pr. Bost. Soc. xii. 1868, 110.—*Coues,* Pr. Ess. Inst. v. 1868, 275.—*Lawr.* Ann. Lyc. N. Y. ix. 1869, 200 (Yucatan).—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19.—*Sumich.* Mem. Bost. Soc. i. 1869, 547 (Orizaba).—*Abbott,* Am. Nat. iv. 1870, 543.—*Cope,* ibid. 395.—*Coues,* Key, 1872, 109, f. 49.—*Gundl.* J. f. O. 1872, 419 (Cuba).—*Purdie,* Am. Nat. vii. 1873, 692.—*Snow,* B. Kans. 1873, 5.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235 (Iowa).—*Coues,* BNW. 1874, 78.—*B. B. & R.* NAB. i. 1874, 314, pl. 15, f. 10, 11.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440 (Connecticut).—*Gentry,* Life-Hist. i. 1876, 165.—*Merr.* Tr. Conn. Acad. i. 1877, 25 (Connecticut; abundant).

Myodioctes mitrata, *Pratten,* Tr. Illinois Agric. Soc. i. 1855, 601.

Myiidioctes mitratus, *Scl.* PZS. 1858, 358 (Honduras).

Myiodioctes mitratus, *Cope,* Am. Nat. iv. 1870, 395.

Myioctonus mitratus, *Cab.* MH. i. 1850, 18 (type).—*Gundl.* J. f. O. 1855, 472 (Cuba).—*Gundl.* J. f. O. 1861, 407 (Cuba).

Sylvicola mitrata, *Maxim.* J. f. O. 1858, 113.

Muscicapa cucullata, *Wils.* AO. iii. 1811, 101, pl. 26, f. 3.—*Bp.* Journ. Phila. Acad. iv. 1824, 177.

Muscicapa pileata, *Steph.* Gen. Zool. x. 1817, 399 (= *Sylvia mitrata* Lath.).

Muscicapa selbyii, *Aud.* "OB. i. 1831, 46, pl. 9".

Muscicapa selbii, *Nutt.* Man. i. 1832, 296.

Hooded Titmouse, Parus cucullo nigro, *Catesby,* Car. i. 1771, 60, pl. 60.

Mésange à collier de la Caroline, Parus carolinensis torquatus, *Briss.* Orn. iii. 1760 578, n. 16.

Gobe-mouche, de la Louisiane, *name* on PE. 666, f. 2 (basis of *Mot. mitrata* var. β. Gm.).

Gobe-mouche citrin de la Louisiane, *Buff.* "Hist. Nat. Ois. iv. 538" (PE. 666, f. 2).

Hooded Warbler, *Penn.* AZ. ii. 1785, 400, n. 287.—*Lath.* Syn. ii. pt. ii. 1783, 462, n. 68.

Setophaga mitré, *D'Orb.* l. c.

Fauvette mitrée, *V.* ll. cc.—*Le Moine,* Ois. Canad. 1861, 189.

Hooded Flycatching Warbler, *Aud.* l. c.

Hooded *or* **Mitred Warbler, Selby's Sylvan Flycatcher, Mitred Sylvan Flycatcher,** *Nutt.* ll. cc.

FIG. 43.—Hooded Flycatching Warbler, natural size.

HAB.—Eastern United States, rather southerly; north regularly to the Middle States and the Connecticut Valley (*Linsley,* Am. Journ. Sci. 1843, 257; *Merriam,* l. c.) and casually to ? Massachusetts (*Samuels, l. c.*). West to Kansas. Bermudas, Cuba, Jamaica. Eastern Mexico and Central America. Breeds at large in its United States range. Winters extralimital.

"Myiodioctes? minutus.—Small-headed Flycatcher."

Muscicapa minuta, *Wils.* AO. vi. 1812, 62, pl. 50, f. 5.—*Bp.* Journ. Phila. Acad. iv. 1824, 179.—*Nutt.* Man. i. 1832, 296.—*Aud.* OB. v. 1839, 291, pl. 434, f. 2.—*Aud.* Syn. 1839, 44.—*Peab.* Rep. Orn. Mass. 1839, 296 (Massachusetts, *auct.* Brewer).—*Aud.* BA. i. 1840, 238, pl. 67.—*Putn.* Pr. Ess. Inst. i. 1856, 226.

Sylvia minuta, *Bp.* Journ. Phila. Acad. iv. 1824, 197.

Wilsonia minuta, *Bp.* CGL. 1838, 23.—*Allen,* Pr. Ess. Inst. iv. 1864, 83.—*Allen,* Am. Nat. iii. 1869, 577.

Setophaga minuta, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 172.—*Hoy,* Pr. Phila. Acad. 1853, 309 (Wisconsin).

Myiodioctes minutus, *Bd.* BNA. 1858, 293.—*Bd.* Rev. AB. 1865, 241.—*Turnb.* B. E. Pa. 1869, 53; Phila. ed. 42.—*B. B. & R.* NAB. i. 1874, 316.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.

Muscicapa *or* **Myiodioctes "minuta",** *Coues,* Pr. Ess. Inst. v. 1868, 275.

Sylvania pumilia, *Nutt.* Man. i. 2d ed. 1840, 334.

Small-headed Flycatcher of *Wilson* and *Audubon.*

Small-headed Sylvan Flycatcher, *Nutt.* l. c. 1832.

HAB.—"Eastern United States."—The above synonymy is nearly all mere compilation, the several authors, excepting Wilson, Nuttall, and Audubon, not claiming to know the species. The existence of any such bird is doubtful, and its reference to *Myiodioctes* by Baird and others is wholly conjectural. Bonaparte first put it here, *i. e.,* in his genus *Wilsonia,* but in 1850 queerly identified it with *Empidonax flaviventris* of Baird. The history of the bird begins with a misunderstanding between Wilson and Audubon, and the whole record from that day to this is a tissue of surmises.

Wilson's Green Black-capped Flycatching Warbler

Myiodioctes pusillus

Muscicapa pusilla, *Wils.* AO. iii. 1811, 103, pl. 26, f. 4.—*Bp.* Journ. Phila. Acad. iv. 1824, 179, 277.—*Thomps.* Vermont, 1853, App. 22.—*Henry,* Pr. Phila. Acad. vii. 1855, 308 (New Mexico).—*Willis,* Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).

Wilsonia pusilla, *Bp.* CGL. 1838, 23.—*Allen,* Pr. Ess. Inst. iv. 1864, 64.—*Allen,* Bull. MCZ. iii. 1872, 175.—*Allen,* Am. Nat. vi. 1872, 346, 348.

Sylvania pusilla, *Nutt.* Man. i. 2d ed. 1840, 335.—*Gamb.* Pr. Phila. Acad. iii. 1847, 156 (California).—*Gamb.* Journ. Phila. Acad. i. 1847, 38.

Myiodioctes pusilla, *Bp.* CA. i. 1850, 315.

Myioctonus pusillus, *Cab.* MH. i. 1850, 18.

Myiodioctes pusillus, *Scl.* PZS. 1856, 291.—*Bd.* BNA. 1858, 293.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 10.—*Heerm.* PRRR. x. 1859, 39.—*Xant.* Pr. Phila. Acad. xi. 1859, 191 (California).—*Scl.* PZS. 1859, 363 (Xalapa).—*S. & S.* Ibis, i. 1859, 11 (Guatemala).—*Coop. & Suck.* NHWT. 1860, 182.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 364.—*Cab.* J. f. O. 1860, 325 (Costa Rica).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Verr.* Pr. Ess. Inst. iii. 1862, 147.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 409.—*Blak.* Ibis, v. 1863, 63 (Mackenzie River).—*Lord,* Pr. Roy. Arty. Inst. iv. 1864, 115.—*Bd.* Rev. AB. 1865, 240.—*Coues,* Ibis, 2d ser. i. 1865, 163.—*Dress.* ibid. 478 (Texas).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*Coues,* Pr. Phila. Acad. 1866, 71 (Fort Whipple).—*McIlwr.* Pr. Ess. Inst. v. 1866, 86.—*Trippe,* Am. Nat. ii. 1868, 170, 175.—*Coues,* Pr. Phila. Acad. 1868, 83.—*Coues,* Pr. Ess. Inst. v. 1868, 274.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 95 (Costa Rica).—*Coues,* Pr. Bost. Soc. xii. 1868, 111 (South Carolina).—*Coues,* Pr. Phila. Acad. 1868, 83 (Arizona).—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Texas).—*Dall & Bann.* Tr. Chicago Acad. i. 1869, 278 (Alaska).—*v. Frantz.* J. f. O. 1869, 294 (Costa Rica).—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19.—*Scl.* PZS. 1869, 374 (Oaxaca).—*Coop.* Am. Nat. iii. 1869, 480.—*Coop.* Pr. Cal. Acad. 1870, 75.—*Coop.* B. Cal. i. 1870, 101.—*Salv.* PZS. 1870, 183 (Veragua).—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 463.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 369.—*Aiken,* Pr. Bost. Soc. xv. 1872, 197.—*Finsch,* Abh. Nat. iii. 1872, 36.—*Coues,* Key, 1872, 109, f. 50.—*Salv.* Ibis, 3d ser. iii. 1873, 334 (San Domingo).—*Ridgw.* Am. Nat.

vii. 1873, 608.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 675, 713.—*Coop.* Am. Nat. viii. 1874, 16.—*Coues*, BNW. 1874, 79, 232.—*B. B. & R.* NAB. i. 1874, 317, pl. 16, f. 3, 4.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 10.—*Hensh.* ibid. 42, 103.—*Hensh.* List B. Ariz. 1875, 156.—*Nelson*, Pr. Bost. Soc. xvii. 1875, 343, 357.—*Brew.* ibid. 440.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 207.—*Gentry*, Life-Hist. i. 1876, 167.—*Minot*, B. N. Engl. 1877, 129.

Myiodioctes pusillus, *Scl.* PZS. 1858, 299 (Parada).

Motacilla pileolata, *Pall.* ZRA. i. 1831, 497.

Myiodioctes pusillus *var.* **pileolatus,** *Ridgw.* Am. Journ. Sci. 1872, 457.—*Ridgw.* Am. Nat. vii. 1873, 608.—*Coues*, Am. Nat. vii. 1873, 417.—*B. B. & R.* NAB. i. 1874, 319.

Sylvia wilsonii, *Bp.* Journ. Phila. Acad. iv. 1824, 179.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 86.—*Nutt.* Man. i. 1832, 438.—*Towns.* Journ. Phila. Acad. viii. 1839, 153.

Setophaga wilsonii, *Jard.* "ed. Wils. 1832".—*Cabot*, Naum. ii. Heft iii. 1852, 66.—*Hoy*, Pr. Phila. Acad. vi. 1853, 309.—*Hoy*, Smiths. Rep. for 1864, 1865, 437.

Muscicapa wilsonii, *Aud.* OB. ii. 1834, 148, pl. 124.—*Peab.* Rep. Orn. Mass. 1839, 297.

Myiodioctes wilsonii, *Aud.* Syn. 1839, 50.—*Aud.* BA. ii. 1841, 21, pl. 75.—*Putn.* Pr. Ess. Inst. i. 1856, 206.—*Willis*, Smiths. Rep. for 1858, 1859, 282.

Sylvania wilsonii, *Woodh.* Sitgr. Rep. Zuñi R. 1853, 69.

Abrornis atricapilla?, *Blyth*, Ibis, 1870, 169, from "China" (see Finsch, PZS. Dec. 7, 1875).

Sylvia petasodes, *? Licht.* "Preis-Verz. 1830" (others quote *S. petesoda*).

Green Black-capt Warbler, *Nutt.* l. c.

Wilson's Green Black-capped Flycatching Warbler, *Coues*, l. c. 1874.

Green Black-capped Flycatcher, *or* **Flycatching Warbler, Wilson's Flycatching Warbler,** *Authors.*

HAB.—The whole of North America, Mexico, and Central America, in suitable localities. No West Indian record. Breeds probably from the latitude of Massachusetts northward, and in the higher mountains of the West as far south at least as Colorado, if not farther. Winters extralimital.

Var. *pileolatus* from the moist Pacific slopes, and quotations of "pusillus" from this region are referable to it. Bonaparte first noticed the brighter coloration of the western race (Compt. Rend. 1854, —).

CH. SP.—♂ *Olivaceus, infrà flavus; fronte superciliisque cum lateribus capitis flavis, pileo nitente-atro;* ♀ *pileo dorso concolore.*

♂, adult: Upper parts, including exposed edgings of the wings and tail, bright yellowish-olive; under parts, including front and sides of the head and superciliary line, rich yellow, somewhat shaded with olive. A squarish, glossy blue-black patch on the crown. Wings and tail plain fuscous, with greenish edgings, unmarked with other color. Upper mandible dark; under mandible and feet pale. Length, 4¾; extent, 7; wing, 2–2¼; tail, 2.

♀, and young: Exactly like the male, except in lacking the black cap, the crown being colored like the back.

There is very little variation in this species, according to age or season, though the adult summer birds are the more richly colored. Western specimens are frequently of a brighter yellow, almost orange, on the fore parts below and on the head, constituting var. *pileolatus*. This latter is not confined to the Pacific coast region; the brightest specimen before me, in the large series examined, among which are Mr. Ridgway's types of *pileolatus*, being from New Mexico. My Arizona specimens are precisely like Pennsylvania ones.

SO far as my knowledge of the record enables me to say, this pretty bird was discovered in the extreme northwestern corner of America by the celebrated traveller and naturalist Pallas, whose description was printed in the "Zoographia" in

1811, but not published till 1831. He called it *Motacilla pileolata;* but Wilson, in 1811, published it as a new species under the style of *Muscicapa pusilla*, the specific portion of which name will stand, for Bonaparte's alteration to *wilsonii* is not required after the removal of the species from the genus in which Wilson wrongly placed it.

It is a rather common bird of passage through the Eastern portions of the United States, and decidedly more abundant in the West, in all wooded regions from the Rocky Mountains to the Pacific. Its comparative numbers on the different sides of the continent help to an understanding of the apparent absence from the West Indies of a bird so widely distributed. For, from its winter home in Central America, where it is represented to be very numerous, it migrates through Mexico and perhaps across the Gulf, the greater number of individuals passing straight north, while but a small proportion spread easterly along the Atlantic States. In the Mississippi Valley and eastward, it is not known to stop to breed short of the latitude of Massachusetts, and I think that its nesting even so far south as this is not positively determined, but rather inferred from the presence of the bird in August, as recorded by Mr. Allen. In Maine, however, it is noted without question as a summer resident by no less conservative an ornithologist than Dr. Brewer, whose aim latterly has been to present a list of New England birds from which all logical induction as well as all error should be rigidly excluded. But I am not aware that the nest has been found even in Northern New England, nor indeed anywhere in the United States, unless the Nuttall's advices from Oregon be considered satisfactory. The bird passes through chiefly during the month of May in the spring, and in September and October of the following migratory season. It proceeds as far at least as Labrador, where it was found breeding by Audubon, as it also was in Newfoundland, and whence it begins to migrate during the latter part of August, according to the same authority. Audubon's description of a Labrador nest, and Nuttall's notice of one he found in Oregon, are still our only sources of information respecting the nidification of the bird. The former's nest was placed at the end of a small horizontal branch of a dwarf fir, in the dense terminal foliage, three feet or so from the ground, in the centre of one of the thickets

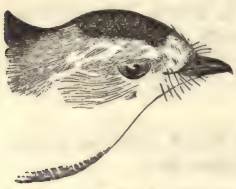

FIG. 44.—Wilson's Green Black-capped Flycatching Warbler, natural size.

of these trees so common in Labrador. It was composed of dry moss and delicate pine twigs "agglutinated" together and to the support from which it was suspended, and was lined with "extremely fine and transparent fibres". It measured not over 3½ inches in greatest diameter, with a depth of not more than 1½ inches. The eggs were four, "dull white, sprinkled with reddish and brown dots towards the larger end, where the markings form a circle, leaving the extremity plain". Nuttall's Oregon nest, which contained four fresh eggs on the 16th of May, though fully-fledged young had already been observed, was laid on a bunch of *Usnea* on the branch of a small service-bush, and was built chiefly of *Hypnum* moss, with a lining of slender grasses. It will be observed that these accounts do not tally well, leaving room for conjecture whether both, if either, really refer to the present species. Dr. Brewer mentions, but does not describe, a nest obtained on the Yukon River, May 20, containing four eggs, ranging from 0.60 to 0.63 in length by 0.45 to 0.49 in breadth, pure white in ground-color, finely sprinkled round the larger end with brownish-red and lilac; and surmises by logical induction, from what premises I know not, that this bird builds upon the ground.

The case of Blackcap's migrations and nestlings is very different in the West, where range after range of lofty mountains invites a southerly summer residence, in the selection of which altitude answers to latitude. The bird certainly breeds in the mountains of Colorado, and probably does so in those of New Mexico, Arizona, and corresponding portions of California. For Mr. J. A. Allen found it in summer in the first-mentioned State, in alpine and subalpine districts, from an altitude of about 8,000 feet to beyond timber-line, "evidently breeding", though he failed to discover its nest. In the dwarfed willows and other shrubs that extend above the limit of trees, it was found to be the most numerous by far of all the small insectivorous birds; and the alpine character thus exhibited by the species accords completely with the known facts of its summer distribution elsewhere. In Nevada or Utah, Mr. Ridgway found the bird common "during the summer" in the cañons of the higher ranges; and in September it was one of the most abundant of the *Sylvicolidæ* in the East Humboldt Mountains and in Ruby Valley, without regard to altitude. In the mountains of Arizona, at the altitude of Fort Whipple, I found it to be a common summer resident, arriving early in May and remaining through part of September; but I was no more fortunate than Allen

and the rest have been in the search for its nest. Mr. Henshaw has a paragraph in his late work confirmatory of the probable breeding of the Blackcap in Arizona:—"That some remain in Arizona to breed, retiring for this purpose to the summits of the high mountain ranges, seems quite probable; for I have met with individuals early in August which could hardly at this date have made their way from very far north, while, by the middle of this month, the species abounds everywhere, being much more widely diffused and in greater numbers than it ever is in the East." Finally, I may refer to a note given by Dr. Cooper, who observed the arrival of the birds at Santa Cruz about the 20th of April, and saw them "apparently gathering materials for nests" about the same time. Farther north, near and beyond the boundary of the United States, the breeding-range of the bird drops down to sea-level, as it does in Northern New England.

There is nothing to show that the Blackcap ever winters over our border, notwithstanding the great lengths to which it pushes its spring migration. It will be remembered that it belongs to an essentially semi-tropical group of birds, comparatively few of which enter the United States at all. Its extra-limital range has been already mentioned.

Though the distribution and movements of the species are thus satisfactorily made out, its special habits or distinctive traits, if it have any, do not appear to have been very carefully studied by any one.—Since penning the last sentence, I have looked over a dozen or more of the fragmentary notices we possess, without finding anything to justify transcription; and my own observations serve me with nothing particularly to the point.

Genus CARDELLINA Dubus

Cardellina, "*Dubus*, Esq. Orn. 1850, —".—*Bp.* CA. i. 1850, 312. (Type *C. amicta* Dubus = *Muscicapa rubrifrons* Giraud.)—*Bd.* Rev. AB. 1865, 263.
Ergaticus, *Bd.* Rev. AB. 1865, 264. (As subgenus of *Cardellina*; type *Setophaga rubra* Sw.)

CHARS.—"Bill Parine in appearance, much shorter than head, high at base, and the culmen considerably decurved throughout; the commissure curved and somewhat angulated in the middle. Rictal bristles stiff, but not very long, hardly reaching half way from the nostrils to tip of bill, which exhibits scarcely any trace of notch. Wings long and pointed; the 2d, 3d, and 4th quills nearly equal and longest; the 1st a little longer than the 5th. The tail is shorter than the wings, nearly even, a very little rounded. Feet small; tarsi short, the scutellar divisions

indistinct externally; the middle toe without claw little more than half the tarsus."—*Baird, l. c.*

I copy the diagnosis of this genus from Baird, whose critical studies of this group furnish very nice discriminations between the several sections of the Flycatching Warblers. As restricted by him, the genus contains but two species, for one of which he proposed a new subgenus, *Ergaticus*. The latter, the Vermilion Flycatcher, *Cardellina* (*Ergaticus*) *rubra** has been attributed to Texas since 1841, but is not positively known to have ever occurred over our border; it inhabits Mexico, and may yet be detected in Southern Arizona or New Mexico, as well as, more probably, in Southern Texas. It is a beautiful bird, of carmine-red color all over, with silvery-white ear-tufts. The type of the genus, *C. rubrifrons*, is one of the many interesting additions to our fauna lately made by Mr. Henshaw.

Red-faced Warbler

Cardellina rubrifrons

Muscicapa rubrifrons, *Gir.* Sixt. Sp. Tex. B. 1841, pl. 7, f. 1.

Setophaga rubrifrons, *Bd.* Stansb. Rep. GSL. 1852, 329.

Cardellina rubrifrons, *Scl.* PZS. 1855, 66.—*Bd.* BNA. 1858, 306.—*Scl.* PZS. 1858, 299 (Parada).—*Scl.* PZS. 1859, 374 (Oaxaca).—*Scl.* Cat. AB. 1861, 37.—*Bd.* Rev. AB. 1865, 264.—*Salv.* Ibis, 2d ser. ii. 1866, 192 (Guatemala).—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 211 (Arizona).

Basileuterus rubrifrons, *? Scl.* PZS. 1859, 363 (Xalapa).

Cardellina rubrifrons, *Salv.* Ibis, 3d ser. iv. 1874, 99 (Guatemala).—*Hensh.* List B. Ariz. 1875, 156 (Arizona).

Cardellina amicta, *Dubus.* "Esq. Orn. 1850, pl. 25".—*Bp.* CA. i. 1850, 312.

Parus erythropis, *Licht.* "Mus. Berol."

HAB.—From Southern Arizona through Mexico to Guatemala.

CH. SP.—♂ ♀ *Cinerea; nuchâ, uropygio, partibusque inferioribus albis, plus minusve rosaceo-tinctis; capite rubro, cucullo nigro; alis caudâque fusco-griseis, albido limbatis, alis albo fasciatis.*

♂ ♀: Upper parts ash, the wings and tail rather darker, and edged with ashy-white; a broader and whiter bar across the ends of the median coverts. Below from the breast, white, more or less shaded with ashy on the sides, and tinged with rosy. Rump and a nuchal patch white, or rosy-white.

***Cardellina (Ergaticus) rubra.—Vermilion Flycatcher.**

Setophaga rubra, *Sw.* Philos. Mag. i. 1827, 368; Isis, 1834, 784.—*Bp.* PZS. 1837, iii (Guatemala).—*Bd.* Stansb. Rep. GCL. 1852, 329.—*Scl.* PZS. 1855, 65.

Cardellina rubra, *Bp.* CA. i. 1850, 312.—*Cass.* Ill. i. 1854, 265, pl. 43.—*Scl.* PZS. 1856, 292 (El Jacale); 1858, 299 (Parada); 1859, 363 (Xalapa); 1859, 374 (Oaxaca).—*Bd.* BNA. 1858, 296.—*Scl.* Cat. AB. 1861, 38.—*Scl.* PZS. 1864, 173 (City of Mexico).—*Bd.* Rev. AB. 1865, 264 (type of subg. *Ergaticus*).

Basileuterus ruber, *Cab.* MH. i. 1850, 18.

Sylvia miniata, *Lafr.* "Mag. de Zool. 1836, pl. 54" (not *Setophaga miniata* of Swainson).

White-cheeked Titmouse, Parus leucotis, *Gir.* 16 Sp. Tex. Birds, 1841, not paged, folio 17, pl. 4, f. 1.—*Leib,* Pr. Phila. Acad. i. 1842, 140 (identifies it with *Setophaga rubra* Sw.).

Sylvia argyrotis, "*Illiger*".

Vermilion Flycatcher, *Cass.* l. c.—*Bd* l. c.

Whole head, throat, sides of the neck, and fore breast bright red, with a broad black cap extending down on the sides of the head, involving the eyes and ears, ending in a point below the auriculars. The border of this cap is squarely transverse against the red of the forehead from eye to eye; behind it, the red reaches up the sides of neck, but not across the back of the neck, the white nuchal area there meeting the ashy of the back. Bill and feet dark.—In the highest summer plumage, the red is rich and carmine in hue, the cap glossy-black; the under parts are much tinged with rosy; the rump is snowy-white. Less richly feathered specimens have the head plain red, the cap sooty-black. There is much difference in the character of the white on the nape.—Length, 5; wing, $2\frac{3}{8}$; tail, $2\frac{1}{2}$; tarsus, $\frac{3}{8}$; bill, $\frac{1}{8}$, quite different in shape from that of *Setophaga*, being of a Parine contour, stout at base, with high arched ridge.

Young, newly fledged: Ash of the upper parts much shaded with brown, and white of the under parts the same. Rump snowy-white, as in the adult, but the nuchal patch obscure or inappreciable. Wings and tail as in the adult, but with browner edgings. Black cap restricted to top of head, and of a dull sooty cast. Red parts of the adult, including those parts of the side of the head which are occupied in the adult with the extension of the black cap, dull grayish-brown, tinged or irregularly slashed with red, especially on the forehead and throat. Bill light brown; feet pale.

THIS is another one of Mr. J. P. Giraud's "Sixteen Species" alleged to have been procured in Texas. Since the time of its original description, in 1841, it has become well known as a bird of Mexico and of parts of Central America; but its occurrence in the United States has only very recently been confirmed, when the bird was rediscovered by Mr. Henshaw, not in Texas indeed, but in Southern Arizona. This assiduous ornithologist secured, in 1874, a fine large *suite* of specimens illustrating the adult plumages of both sexes, and also that of the young; while his field-notes furnish most of the information we possess respecting the habits of the bird.

As he remarks, its occurrence in Arizona is not surprising, as the species is a common inhabitant of the mountains of Mexico, doubtless following the trend of the ranges northward into our territory. He found his birds at two points in Arizona, about a hundred miles apart,—near Camp Apache and on Mount Graham; and he anticipates their occurrence throughout the higher districts of Southern Arizona as far north as the White Mountains at least. His Camp Apache specimens include some in the nestling plumage, indicating that they were reared in the vicinity. The extracts from his note-books that he prints in his final (quarto) report are as follows:—

"*July* 1,* 1874.—While collecting in the early evening in the

* Misprint for July 12, as the author informs me verbally.

pine woods, a few angry chirps coming from the thick foliage of a spruce attracted my attention, and in a moment a robin flew out in hot haste closely followed by a small bird, which after a short chase returned, and with a few satisfied chirps called together several young, whose presence I for the first time was thus made aware of. The old bird immediately began to search for food, moving like a Chickadee over the limbs, flying out now and then for a short distance to snap up an insect, which was instantly given to one or the other of several young that, with beseeching notes and cries, followed the old one about as it moved from one part of the tree to another. Soon perceiving that the birds were entire strangers to me, I shot first the old bird, which proved to be a male, and then two of the young, when the female appeared on the scene, and led away the two remaining members of the brood in safety. The following day a careful search revealed but two more individuals, both adult.

"Just [half] a month later, on visiting Mount Graham, I not only saw the species again, but it proved to be a common bird of this locality, flocks of ten or fifteen being not unusual among the pines and spruces; it frequented these trees almost exclusively, only rarely being seen on the bushes that fringed the streams. Its habits are a rather strange compound, now resembling those of Warblers, again recalling the Redstarts, but more often perhaps bringing to mind the less graceful motions of the familiar Titmice. Their favorite hunting places appeared to be the extremities of the limbs of the spruces, over the branches of which they passed with quick motion, and a peculiar and constant sidewise jerk of the tail.

"When thus engaged, especially when high overhead, they might easily be passed by, as a busy group of Titmice intent only on satisfying their hunger. They appear to obtain most of their food from the branches, seizing the insects when at rest; but they are abundantly able to take their prey on the wing, and accomplish this much after the style of the Redstarts. Their disposition seems to prompt them to sociability with other species, and occasionally I found them accompanying the Audubon's Warblers, and imitating them in their short flights from tree to tree, occasionally paying flying visits to the fallen logs and even to the ground. Save in being rather louder and harsher, their chirps resemble the notes of the Yellow-rump Warblers."

The bird thus introduced by Mr. Henshaw with some particularity to American ornithologists as one of their newest acquisitions, is left as found to my readers,—some one of whom, perhaps, may hereafter have his own story to tell of its nest, its eggs, and its nuptial song.

Genus SETOPHAGA Swainson

Setophaga, *Sw.* Zool. Journ. iii. Dec. 1827, 360. (Type *Muscicapa ruticilla* L.)—*Bd.* BNA. 1858, 297.—*Bd.* Rev. AB. 1865, 253.
Cetophaga, "*Less.* 1828", *fide* Gray.
Erythrosoma, *Sw.* 182–, *fide* Gray.
Sylvania, *Nutt.* Man. Orn. i. 1st ed. 1832, 290. (Type *Muscicapa ruticilla* L., but includes species of *Myiodioctes* and *Polioptila.*)
Euthlypis, *Cab.* MH. i. 1850, 18. (Type *Sylvia lachrymosa* Licht.)
Myioborus, *Bd.* Rev. AB. 1865, 237, 257. (Separate subgenus.)

CHARS.—Bill thoroughly Muscicapine in its depression and breadth at base, where it is wider than high, the straightness of both superior and lateral outlines, and the development of the rictal bristles, which reach far beyond the nostrils. Wings pointed, not shorter than the tail, the 2d, 3d, and 4th quills nearly equal and longest, the 1st intermediate between the 4th and 5th. Tail rather long and fan-shaped, with broad flat feathers, widening at their ends. Feet slender, with long tarsi indistinctly scutellate externally, and short toes, the middle one without its claw being about half as long as the tarsus. Coloration indeterminate. Habits arboricole and Muscicapine.

The genus *Setophaga*, based by Swainson, in 1827, on *Muscicapa ruticilla*, has been made to cover considerable variety in form among the numerous species of Flycatching Warblers of subtropical and tropical America, where the genus is best represented. The foregoing diagnosis is drawn up from *S. ruticilla*, and may require some little modification in order to its applicability even to *S. picta*. All the extralimital species, as pointed out by Baird, differ in the shorter and more rounded wing and other characters; and he has combined them all into a separate subgenus, *Myioborus*, excepting *S. lachrymosa*, for which Cabanis had already proposed the name *Euthlypis*.

S. ruticilla is the only species in which the sexes are decidedly dissimilar in color; even in *S. picta*, the nearest ally, the sexes are substantially alike; and in all the rest of the group, in which the coloration is very various, there is no substantial difference between the sexes. Species of *Setophaga* (including *Myioborus* and *Euthlypis*), to the number of twelve or more, are recognized by late authors. *S. ruticilla* is the only one that is generally

distributed in this country. *S. picta* reaches just over our border. A third, *S. miniata*, has been ascribed to Texas, as have also two species of the allied genus *Basileuterus*, *B. culicivorus* and *B. belli;* the synonymy of which three species is subjoined, as any of them may be hereafter found in the region under present consideration:—

Setophaga miniata.

Setophaga miniata, *Sw.* "Philos. Mag. i. 1827, 368"; Isis, 1834, 784; Anim. Menag. 1838, 293. (Not of Lafresnaye.)—*Scl.* PZS. 1856, 292 (Cordova); 1858, 299 (Oaxaca).—*Bd.* BNA. 1858, 299; Atlas, 1860, pl. 58, f. 1.—*Scl.* PZS. 1859, 363 (Xalapa).—*Scl.* Cat. AB. 1861, 37.—*Scl.* PZS. 1864, 173 (City of Mexico).—*Bd.* Rev. AB. 1865, 259.—*B. B. & R.* NAB. i. 1874, 322.

Muscicapa vulnerata, *Wagler,* Isis, 1831, 520.

Setophaga vulnerata, "*Gray*".—*Cab.* MH. i. 1850, 18.—*Bp.* CA. i. 1850, 313.—*Bd.* Rep. Great Salt Lake, 1852, 329 ("Texas").

Setophaga castanea, *Less.* Rev. Zool. 1839, 42.

Muscicapa derhamii, *Giraud,* Sixt. Sp. Tex. B. 1841, not paged, folio 13, pl. 3, f. 2 (named for C. H. De Rham; printed *derhamii*, amended in MS. in copy examined to *De-rhamii;* named *Derahm's Flycatcher* on plate). (See *Scl.* PZS. 1855, 65.)

HAB.—Mexico. "Texas" (*Giraud*).

Basileuterus culicivorus.

Sylvia culicivora, *Licht.* "Preis-Verz. Mex. Vög. 1830, n. 78"; J. f. O. 1863, 57.

Basileuterus culicivorus, *Cab.* Mus. Hein. i. 1850, 17.—*Bd.* Rev. AB. 1865, 245.—*B. B. & R.* NAB. i. 1874, 312.

Basileuterus culicivora, *Bp.* CA. i. 1850, 313.

Muscicapa brasierii, *Giraud.* Sixt. Sp. B. Tex. 1841, not paged, folio 25, pl. 6, f. 2.—*Scl.* PZS. 1855, 66.

Basileuterus brasieri, *Scl.* PZS. 1856, 292 (Oaxaca); 1859, 374 (Oaxaca).—*S. & S.* Ibis, 1860, 274 (Guatemala.)—*Scl.* Cat. AB. 1861, 34.

HAB.—Mexico and Central America. "Texas" (*Giraud*).

Basileuterus belli.

Muscicapa belli, *Giraud,* Sixt. Sp. Tex. B. 1841, not paged, folio 15, pl. 4, f. 2.—*Scl.* PZS. 1855, 65.

Setophaga belli, *Bd.* Rep. Great Salt Lake, 1852, 329 ("Texas").

Basileuterus belli, *Scl.* PZS. 1855, 65.—*Scl.* PZS. 1859, 374 (Oaxaca).—*Scl. & Salv.* Ibis, 1860, 31 (Guatemala).—*Bd.* Rev. AB. 1865, 250.—*B. B. & R.* NAB. i. 1874, 313.

Basileuterus bellii, *Scl.* Cat. AB. 1861, 35 (Orizaba).

Sylvia chrysophrys, *Licht.* "Mus. Berol."

Myiodioctes chrysophrys, *Licht.* "Nomencl. 32".

Basileuterus chrysophrys, *Bp.* CA. i. 1850, 314.—*Scl.* PZS. 1857, 202 (Xalapa).

HAB.—Mexico and Guatemala. "Texas" (*Giraud*).

Painted Flycatcher

Setophaga picta

Setophaga picta, *Sw.* "Zool. Ill. 2d ser. i. 1829, pl. 3"; Anim. Menag. 1838, 293.—*Bp.* CA. i. 1850, 312.—*Kaup,* PZS. 1851, 50,—*Bd.* Stansb. Rep. GSL. 1852, 329.—*Scl.* PZS. 1855, 66.—*Scl.* PZS. 1856, 292 (Honduras).—*Scl.* PZS. 1858, 299.—*Bd.* BNA. 1858, 298; ed. of 1860, pl. 76, f. 2.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 11 (Nuevo Leon).—*S. & S.* Ibis, i. 1859, 12 (Guatemala).—*Tayl.* Ibis, ii. 1860, 110 (Honduras).—*Scl.* Cat. AB. 1861, 36.—*Bd.* Rev. AB. i. 1865, 256.—*Scl.* PZS. 1869, 374.—*Coues,* Key, 1872, 110.—*Ridgw.* Am. Nat. vi. 1872, 436.—*Coues,* Am. Nat. vii. 1873, 325 (Arizona).—*Hensh.* Rep. Orn. Specs. 1874, 104 (Arizona).—*B. B. & R.* NAB. iii. 1874, App. 507.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 209.

White Shouldered Flycatcher, Muscicapa leucomus, *Gir.* Sixt. Sp. Tex. B. 1841, not paged, folio 23, pl. 6, f. 1. (See *Scl.* PZS. 1855, 66.)
Muscicapa tricolor, *Licht.* "Mus. Berol."
Painted Fly-snapper, *Tayl.* l. c.
Painted Flycatcher, *Authors.*

HAB.—Mexico and Central America. North into Arizona.

CH. SP.—♂ ♀ *Nigra, pectore medio et abdomine coccineis; palpebris, speculo alari rectricibusque lateralibus albis.*

♂ ♀: Lustrous black; middle of the breast and belly rich carmine-red; eyelids, a large patch on the wings formed by the greater and middle coverts, broad edging of inner secondaries, edging of inner webs of primaries toward the base, lining of wings, nearly all the outer tail-feather, and a diminishing space on the next two or three, together with the crissum, white. Bill and feet black. Length, 5 inches; wing and tail, each 2¾; tarsus, ⅝; bill, ½–⅝.

The ♀ is not particularly different from the ♂, though rather less richly colored. In poor plumages, the black is not so lustrous, the red of the belly less extensive and of a more bricky-red tone, while the white of the wings and tail is more restricted. I have not seen the very young bird. It is described by Henshaw as follows:—"Upper parts dull black, only slightly lustrous; white nearly as in the adult, viz, a spot on the lower eye lid, a patch on the wing, including the greater and middle coverts, the outer edge of first primary only, the outer edges of the secondaries, the inside of wings, axillars, crissum, tibiæ, outer tail feathers except at base, and a diminishing space on the second and third, white."

ALTHOUGH the Painted Flycatcher was included among the birds of this country by Baird in the Pacific Railroad Report, and also in that of the Mexican Boundary, this was done on the strength of its occurrence in New Leon, Mexico, close to our border, where the bird was found by Lieut. D. N. Couch, with many others of special interest to American ornithologists. It will undoubtedly be found in the lower valley of the Rio Grande; but it has not yet been taken over our border, excepting in Arizona, where it was discovered by Lieut. Charles Bendire, United States Army, near Tucson, April 4, 1872, as first recorded by Mr. Ridgway in the "American Naturalist" for July, 1872, p. 436, and as noted by me about the same time in the "Key", p. 110. As I shortly afterward said, in the periodical just mentioned (June, 1873, p. 325), the same observer saw it again about the middle of September, 1872, when it appeared to be retiring into Mexico from its presumed summer home in the mountain fastnesses of the Territory.

During the two following years, in 1873 and 1874, Mr. Henshaw found it common in different portions of Southern Arizona, where it unquestionably breeds, as he secured specimens in July, August, and September. This ornithologist has left

us the following notes respecting the distribution and habits of the bird—one which, though long since entered upon the scientific records, has only just now found a biographer:—

"This beautiful flycatcher has as yet been observed in our territory only in the southeastern portion of Arizona, where it is diffused over a considerable extent of country as a summer resident. It appears not to inhabit the high mountains nor the extreme lowlands, but to occupy an intermediate position, and to find the rocky hills covered with a sparse growth of oak most congenial to its habits. Of its breeding habits, nothing is known; though that it rears its young in such localities as above mentioned there can be no doubt, since I have taken the young birds in the first plumage, and still under charge of the parents, at Rock Cañon, July 21, and again of the same age at Camp Crittenden, August 29. During the latter part of August they appear to become more numerous; this being due to their more general distribution at the close of the nesting season. By the latter part of September, very few remain; and probably the species winters far to the southward.

"Their motions are an almost exact reflection of those of the common Redstart, which they so much resemble in form. With half shut wings and outspread tail, they pass rapidly along the limbs of trees, now and then making a sudden dart for a passing fly, which secured they again alight and resume their search. They are constantly in motion, and rarely remain in the same tree many moments. It not unfrequently may be seen clinging to the trunk of a tree while it seizes a grub or minute insect which its sharp eyes have detected hidden in the bark."

For the rest, we may hope that the nesting and singing of the bird may be brought to our notice by the same person who is to tell us of those particulars in the case of *Cardellina rubrifrons*, which breeds in the same region.

The Redstart

Setophaga ruticilla

Motacilla ruticilla, *L.* SN. i. 1758, 10th ed. 186, n. 15 (Cates. i. 67, etc.).

Muscicapa ruticilla, *L.* SN. i. 1766, 326 n. 10.—*Bodd.* Tabl. 1783, 33 (pl. 566).—*Gm.* SN. i. 1788, 935, n. 10.—*Lath.* IO. ii. 1790, 473, n. 22.—*Turt.* SN. i. 1806, 574.—*V.* OAS. i. 1807, 66, pls. 35, 36.—*Wils.* AO. i. 1808, 103, pl. 6, f. 6; v. 119, pl. 45, f. 2.—*Steph.* Shaw's GZ. xi. 1817, 362.—*Bp.* Journ. Phila. Acad. iv. 1824, 170.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 68.—*Aud.* OB. i. 1831, 202; v. 1839, 428, pl. 40.—*Aud.* Syn. 1839, 44.—*Aud.* BA. i. 1840, 240, pl. 68.—*Peab.* Rep. Orn. Mass. 1839, 296.—*D'Orb.* Ois. Cuba, 1839, 87.—*Gir.* BLI. 1844, 45.—*Denny,* PZS. 1847, 38.—*Thomps.* Vermont, 1853, App. 21.—*Pratten* Tr. Ill. Agric. Soc. i. 1855, 600.—*Putn.* Pr. Ess. Inst. i. 1856, 206.—*Willis,* Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).—*Gosse,* Alabama, 1859, 22.—*Trippe,* Pr. Ess. Inst. vi. 1871, 114.

Muscicapa (Sylvania) ruticilla, *Nutt.* Man. i. 1832, 291, fig. (type of genus).

Setophaga ruticilla, *Sw.* Zool. Journ. iii. 1827, 360; Isis, 1830, 1156.—*S. & R.* FBA. ii. 1831, 223.—*Bp.* PZS. 1837, 118 (Guatemala).—*Bp.* CGL. 1838, 24.—*Nutt.* Man. i. 2d ed. 1840, 327.—*Gosse,* B. Jam. 1847, 164.—*Bp.* CA. i. 1850, 312.—*Cabot,* Naum. ii. Heft iii. 1852, 66.—*Hoy,* Pr. Phila. Acad. vi. 1853, 309.—*Read,* ibid. 397.—*Woodh.* Sitgr. Rep. Zuñi R. 1853, 75.—*Scl.* PZS. 1854, 111 (Quijos).—*Scl.* PZS. 1855, 144 (Bogotá).—*Gundl.* J. f. O. 1855, 472 (Cuba).—*Scl.* PZS. 1856, 289 (Mexico).—*Haym.* Pr. Phila. Acad. viii. 1856, 289.—*Bry.* Pr. Bost. Soc. vi. 1857, 116 (Nova Scotia).—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Sallé,* PZS. 1857, 231 (San Domingo).—*Maxim.* J. f. O. 1858, 186.—*Bd.* BNA. 1858, 297.—*Bry.* Pr. Bost. Soc. vii. 1859, 111 (Bahamas).—*Scl.* PZS. 1859, 374 (Oaxaca).—*S. & S.* Ibis, i. 1859, 12 (Guatemala).—*A. & E. Newt.* Ibis, i. 1859, 144 (Saint Croix).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Cab.* J. f. O. 1860, 325 (Costa Rica).—*Scl.* PZS. 1860, 84 (Ecuador); 292 (Esmeraldas).—*Scl.* PZS. 1861, 72 (Jamaica).—*Albrecht* J. f. O. 1861, 53 (Bahamas).—*Gundl.* J. f. O. 1861, 326 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 322 (New Granada).—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 161.—*Blak.* Ibis, iv. 1862, 4 (Saskatchewan).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 409.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Verr.* ibid. 137 (Anticosti).—*Verr.* Pr. Ess. Inst. iii. 1862, 147.—*Albrecht,* J. f. O. 1862, 194 (Jamaica).—*Blak.* Ibis, v. 1863, 63 (British America).—*March,* Pr. Phila. Acad. xv. 1863, 293 (Jamaica).—*Tayl.* Ibis, vi. 1864, 81 (Trinidad).—*Lawr.* Ann. Lyc. N. Y. viii. 1864, 97 (Sombrero).—*Scl.* PZS. 1864, 172 (City of Mexico).—*S. & S.* PZS. 1864, 347 (Panama).—*Allen,* Pr. Ess. Inst. iv. 1864, 65.—*Bd.* Rev. AB. 1865, 256.—*Dress.* Ibis, 2d ser. i. 1865, 479 (Texas).—*Hoy,* Smiths. Rep. for 1864, 1865, 437 (Missouri).—*Lawr.* Ann. Lyc. N. Y. viii. 1865, 174 (Chiriqui).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*Bry.* Pr. Bost. Soc. x. 1866, 251 (Porto Rico); J. f. O. 1866, 184 (Porto Rico).—*McIlwr.* Pr. Ess. Inst. v. 1866, 86.—*Bry.* Pr Bost. Soc. xi. 1867, 91 (San Domingo).—*Salv.* PZS. 1867, 136 (Veragua).—*Lawr.* Ann. Lyc. N. Y. ix. 1866, 96 (Costa Rica).—*Coues,* Pr. Ess. Inst. v. 1868, 275.—*Coues,* Pr. Bost. Soc. xii. 1868, 111.—*Trippe,* Am. Nat. ii. 1868, 180.—*Coop.* Am. Nat. iii. 1869, 33 (Dakota).—*Coop.* ibid. 295.—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19.—*v. Frantz.* J. f. O. 1869, 294 (Costa Rica).—*Finsch,* PZS. 1870, 564 (Trinidad).—*S. & S.* PZS. 1870, 780 (Merida).—*Salv.* PZS. 1870, 183 (Veragua).—*Abbott,* Am. Nat. iv. 1870, 538.—*Coop.* Am. Nat. iv. 1870, 395, 396, 399.—*Wyatt,* Ibis, 3d ser. i. 1871, 323 (Colombia).—*Stev.* U. S. Geol. Surv. Terr. for 1870, 1871, 463.—*Coues,* Key, 1872, 110.—*Scott,* Pr. Bost. Soc. xv. 1872, 223.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 369.—*Allen,* Am. Nat. vi. 1872, 265.—*Aiken,* Pr. Bost. Soc. xv. 1872, 197 (Colorado).—*Gundl.* J. f. O. 1872, 419 (Cuba).—*Allen,* Bull. MCZ. iii. 1872, 175 (Kansas, Colorado, Utah).—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 713.—*Ridgw.* Bull. Ess. Inst. v. 1873, 180.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235.—*Coues,* BNW. 1874, 81, 232.—*Allen,* Pr. Bost. Soc. xvii. 1874, 53 (Dakota).—*Merr.* Am. Nat. viii. 1874, 87.—*Packard,* ibid. 271.—*B. B. & R.* NAB. i. 1874, 322, figs. pl. 16, f. 1, 5.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 11 (Utah).—*Hensh.* ibid. 42, 75.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 209.—*Gentry,* Life-Hist. i. 1876, 172.—*Minot,* B. N. Engl. 1877, 130.—*Merr.* Tr. Conn. Acad. i. 1877, 27.

Setophaga ruticella, *Kennic.* Tr. Illinois Agric. Soc. i. for 1854, 1855, 582.

Motacilla flavicauda, *Gm.* SN. i. 1788, 997, n. 172 (Edw. pl. 257).—*Turt.* SN. i. 1806, 615 (♀).

Ruticilla americana, *Bartr.* Trav. Fla. 1st Am. ed. 1791, 292.

Muscicapa flaveola, "*Pr. Paul v. Württ.*"

Small American Redstart, *Edw.* pl. 80.

Small Black and Orange coloured Bird, *Sloane,* "Jam. 312, n. 50".

Red-Start, Ruticilla americana, *Cates.* Car. i. 1771, 67, pl. 67.

Gobe-mouche d'Amérique, Muscicapa americana, *Briss.* ii. 1760, 383, n. 14.

Petit noir-aurore, *Buff.* "iv. 546". (PE. 566, f. 1, 2.)

Gobe-mouche d'Amérique, *Buff.* PE. 566, f. 1, 2.

Black-headed Warbler, *Lath.* Syn. ii. pt. ii. 1783, 427, n. 18.—*Penn.* AZ. ii. 1785, 398, n. 282.

Yellow-tailed Flycatcher, *Edw.* pl. 257 (♀).

Yellow-tail Warbler, *Penn.* AZ. ii. 1785, 406, n. 301.

Moucherolle doré, *V.* OAS. i. c.

Gobe-mouche noir et aurore, *D'Orb.* l. c.

American Flycatcher, *Steph.* l. c.

? Sylvia russeicauda, *V.* OAS. ii. 1807, 17, pl. 71.—*V.* N. D. d'H. N. xi. 1817, 266.—*Steph* Gen. Zool. x. 1817, 675.

?Sylvia russicauda, *V.* Ency. Méth. ii. 1823, 476, n. 191.
?Setophaga russicauda, *Gray,* Handlist, i. 1869, 243, n. 3517.
?Fauvette à queue rousse, *V.* OAS. l. c.
Rouge-queue des États-Unis, *V.* ll. cc. 1817 and 1823.
Reddish-tailed Warbler, *Steph.* l. c.
Redstart, American Redstart, Redstart Flycatcher, *Authors.*

[NOTE.—The *Figuier noir et jaune de Cayenne,* PE. 391, f. 2 (= *Figuier noir,* Buff. v. 314 = *Rufous and Black Warbler,* Lath. Syn. ii. pt. ii. 493, n. 121 = *Motacilla multicolor,* Gm. SN. i. 972, n. 109), seems to be near the present species.]

HAB.—The greater part of temperate North America, especially the Eastern Province. North to Fort Simpson. West to Utah. South through Mexico and Central America, and in South America to Ecuador. Most of the West India Islands. Breeds in most of its United States and all of its British American range. Winters extralimital.

CH. SP.— ♂ *Nigra, abdomine crissoque albis, lateribus rubro-aurantiacis, alis caudâque rubro-aurantio dimidiatis.* ♀ *Olivacea, capite cinerascente, infrà alba, lateribus, alis caudâque flavo notatis.*

♂, adult: Lustrous blue-black, the belly, flanks, and crissum white. Sides of the body and lining of wings rich flame-color, which also often tinges the breast quite across. Basal portions of all the wing-quills, excepting the innermost secondaries, the same rich reddish-orange, brightest on the outer webs, where it forms a conspicuous exposed spot, paler and more extensive on the inner webs. All the lateral tail-feathers similarly colored for half or more of their length, the orange meeting the black abruptly with transverse outline. Bill and feet black. Length, 5–5¼; extent, 7½–8; wing, 2¼–2½; tail the same; bill, ½; tarsus, ⅝.

♀, adult: The black of the male replaced on the upper parts with olive, growing more ashy on the head, on the wings with fuscous, and below with white. Sides rich yellow where the male is orange, the color often tinging the breast across. Orange markings of the wings and tail of the male replaced by clear yellow. Lores dusky; eyelids and slight stripe from nostrils to eye whitish. Rather smaller than the male, about equal to the lesser several dimensions above given.

♂, young: Like the female, but the upper parts more brownish, the tail quite black, and the yellow of the sides brighter. Males changing in the spring to their final plumage are irregularly patched with black in the general olivaceous and white.

WHILE the different plumages of this lovely bird are well known, the progress and periods of the changes which the male undergoes remain matters for more precise determination. The female does not change materially in color with the successive moults. The plumage of the young just from the nest is not known. Discrepant statements of authors begin with the first full autumnal feathering. Audubon states that the first year is spent in the garb of the female, the black mottling and the vermilion tints not appearing until toward the

second autumn; that the brilliancy of the perfect dress is acquired the second year; but that they breed and sing the first spring after hatching, just like the full-dress males. Nuttall says that three years are required to perfect the change, probably basing his remark on Wilson's more detailed observations. The last-named author describes the young males of a year old as almost exactly like the females, but differing in some particulars which he specifies, and adds:—"on the third season, they receive their complete colors; and, as males of the second year, in nearly the dress of the female, are often seen in the woods, having the same notes as the full-plumaged males, . . ." &c. In another place, he speaks of finding "both parents of the same nest in the same dress nearly". Baird and Ridgway, on the other hand, while agreeing that the male is not full-dressed "until about the third year", distinguish the sexes from the very first autumn.

It is doubtless true, that all the individuals of this species do not go through the successive changes at exactly the same periods; but, aside from individual perturbations of the process, the following seems to be the usual course of events:—A male hatched in June, say of 1877, leaves the nest in a plumage unknown to us. With the first fall moult of 1877, he appears in the garb of the female. At the first spring change, of 1878, he acquires an intensity of coloration that distinguishes him from the female, but has as yet no black or vermilion; he breeds in this dress at a year old. In the second autumn, of 1878, black appears with the fall change, the tail becoming black. In the spring of 1879, being then not quite two years old, he comes to us in a patchy garb, pure black feathers being interspersed among the brown, olive, or slaty of the general plumage, and the former yellow being heightened to orange. He breeds again in this dress; the autumnal plumage of the same year, 1879, is not materially different; and the spring of 1880, his second spring, when he is nearly three years old, gives him the full black, white, and orange attire. Such, at any rate, is the inference from the facts, that each vernal migration embraces three sets of males: those substantially like the female, without any black or orange; those like the female, but irregularly patched with pure black, and with heightened yellow; and those in perfect dress. It does not appear, therefore, that the male gets any pure black until he is a little over a year old, nor that, like the Bobolink, he has a transitory wedding dress,

to be put on and off each year; but that the change is progressive from the first, and completed toward the end of the third year.

The Redstart shines among the birds that throng the woods in spring, when his transparent beauty flashes like a lambent tongue of flame at play amidst the tender pale green foliage of the trees. The brilliant little meteor glances here and there in seeming sport, with most exuberant vivacity, as if delighted to display in every action of his tiny body the full effect of color-contrast, shifting every moment into novel combinations with the cool shade of the background, himself the foremost figure of an animated picture. But with all this grace and elegance, this revelry and waywardness, when color plays the pleasing part of a continual surprise, the Redstart has an eye to business, and incessantly pursues the gauzy creatures that furnish food to him and all his kind. You may know him even in his early incompleted dress, and never fail to recognize his less conspicuous mate, by several characteristic traits. In their unceasing forays on the insect world, they have a fashion of skipping rapidly along the larger horizontal boughs of trees, with lowered head and drooping wings, and with incessant sidewise flirting of the fan-shaped tail, that best displays its pretty parti-coloration, the attitude and action being exactly those you have observed in the poultry-yard, when the sultan of the harem pursues a reluctant fugitive. These headstrong raids along the limbs are changed at intervals, when still more buoyant and more dexterous action absorbs the ceaseless stream of the Redstart's energy; without a moment's pause, the birds shoot out, to this side or to that, and capture insects on the wing in the most spirited manner; they dart in zigzag, generally downward, while the repeated clicking of their mandibles, as turn after turn is executed at seeming random, yet with admirable precision, tells with what success these dashing guerillas wage their warfare. Such raids are made right through the ranks of the airy little insects that swarm in the sunbeams, and at every descent into their midst not one, but many, of the midges meet their fate; the Flycatcher regains his foothold with marvellous celerity, and races as before along the limb, with many a twitter of delight, till he is lost to view.

The Redstart's notes are very curious; though scarcely describable, they are easily learned, and not likely to be forgotten after they have been heard a few times; and indeed one may

listen to them without the slightest difficulty, so incessantly are they uttered during the breeding season. The actions I have endeavored to portray are invariably accompanied by these queer sounds in the intervals between the side-raids after flying insects. They are rather feeble notes to come from so sprightly and energetic a performer, though delivered with much animation and endless repetition. Wilson rendered their ordinary song by the syllables *weése*, *weése*, *weése*, and alludes to several variations of this twitter his ear had learned to distinguish. "Many of these tones," says Nuttall, "as they are mere trills of harmony cannot be recalled by any words. Their song on their first arrival is however nearly uniform, and greatly resembles the *'tsh 'tsh tshee*, *tshè*, *tshe*, *tshe tshea*, or *'tsh 'tsh 'tsh 'tshitshee* of the summer Yellow-bird (*Sylvia æstiva*), uttered in a piercing and rather slender tone; now and then also agreeably varied with a somewhat plaintive flowing *'tshé 'tshé 'tsché*, or a more agreeable *'tshit 'tshit a'tshee*, given almost in the tones of the Common Yellow-bird (*Fringilla tristis*). I have likewise heard individuals warble out a variety of sweet, and tender, trilling, rather loud and shrill notes, so superior to the ordinary lay of incubation, that the performer would scarcely be supposed the same bird. On some occasions the male also, when angry or alarmed, utters a loud and snapping chirp." It is probably to such notes as these last that Wilson alludes in rendering the sound by *sic*, *sic*, *sàic*. Audubon attempts to indicate the sounds in still a different way: I quote the whole paragraph, which gives a pleasing glimpse of the bird again. "It keeps in perpetual motion," he says, "hunting along the branches sidewise, jumping to either side in search of insects and larvæ, opening its beautiful tail at every movement which it makes, then closing it, and flirting it from side to side, just allowing the transparent beauty of the feathers to be seen for a moment. The wings are observed gently drooping during these motions, and its pleasing notes, which resemble the sounds of *teetee-whee*, *teetee-whee*, are then emitted. Should it observe an insect on the wing, it immediately flies in pursuit of it, either mounts into the air in its wake, or comes towards the ground spirally and in many zig-zags. The insect secured, the lovely Redstart reascends, perches, and sings a different note, equally clear, and which may be expressed by the syllables *wizz*, *wizz*, *wizz*. While following insects on the wing, it keeps its bill constantly open, snapping as if it procured several of them on the same excursion. It is frequently observed balancing itself in the air,

opposite the extremity of a bunch of leaves, and darting into the midst of them after the insects there concealed." Gentry likens the song of the Redstart to that of the Black-and-white Creeper, less prolonged and in a sharper key, and expresses it by the syllables *tsĭ-tsĭ-tsĭwĕ*, the last ending very abruptly.

The writer last mentioned seems to be the only one who has examined the *menu* of the Redstart in detail. He states that he has found the bird feeding at times on fallow ground, and in small bushes as well as among the branches of trees. This novel fact of somewhat terrestrial proclivities on the part of the Redstart is also attested by a recent writer, Mr. H. D. Minot, who observes that the female obtains much of the food for her young from the ground. Mr. Gentry alludes to the immense numbers of beetles destroyed at first, and to subsequent change of the bill of fare to various other orders of insects, following with the results of his actual examination of the contents of the stomach.* Audubon speaks of its inability to capture wasps, and has drawn his beautiful plate to represent the ineffectual attempts of a Redstart to seize a wasp which defied the bird by protruding its sting.

Belonging as it does to a semi-tropical group of Warblers, the Redstart would be supposed neither to linger with us during the winter, nor to be among the earlier spring arrivals of the country at large. I have no information of the bird as an inhabitant of any part of the United States in winter; on the contrary, at that season it is present in tropical America as far

* "We have detected the remains of *Rhynchænus pini, Bostrichus pini, Cratonychus cinereus, C. pertinax, Platynus cupripennis, Harpalus compar, Donacia confluenta, Chrysomela cæruleipennis*, among coleoptera; *Formica sanguinea, F. subterranea, Apis mellifica, Selandria rosæ, S. viti, Megachile centuncularis*, several *Helicti* and *Andrenæ*, among hymenoptera; *Musca domestica, Syrphus obscurus, Culex tæniorhynchus, Stomoxys calcitrans, Tabanus lineola, Tipula ferruginea*, among diptera; *Aphis rosæ, A. mali*, and other *Aphidæ*, the small spiders that infest the bark, leaves, and flowers of plants; *Tegenaria domestica, Epeira diadema*, and mature forms of the lepidoptera *Harrisina Americana, Lithosia miniata, Spilosoma Virginica, Penthina pomonella, Orgya leucostigma*, many of the *Noctuidæ, Tortricidæ, Lycænidæ*, and *Tineidæ*, with the larvæ of *Anisopteryx vernata, Eufitchia ribearia, Pieris rapæ, Colias philodice, Pieris brassicæ, Utetheisa bella, Eudryas grata, Catocolæ*, cutworms of the genus *Agrotis*, and others,"—yet no hint of indigestion! We must admit that the Redstart is not only a good hunter, but a voracious and indiscriminate feeder, like some other beauties we may know of. Dr. Brewer attests another curious parallel between this bird and other reigning belles:—"Even when lamenting the loss of a part of her brood, and flying round with cries of distress, the sight of passing insects is a temptation not to be resisted, and the parent bird will stop her lamentations to catch small flies."

south even as Ecuador. From such resorts it moves probably in February, as we hear of its reaching our southern border at the beginning of the following month. It does not become generally distributed in this country, however, until some time in April, becoming numerous in the Middle districts after the middle of this month, reaching New England and our northern border about the first week in May, and then soon gaining the limits of its northward migration. Its movements are quite regular, and at the height of the season the bird is too abundant in all suitable localities to be overlooked. The return movement is rather early, all the birds, as a rule, passing through the Middle districts during the month of September. It is not so common a bird, apparently, in the West as the East, and the nature of the Rocky Mountain region either interferes with the orderly north and south movement, or else obscures our recognition of the periods of migration. It is well known to occur westward into the Middle Province, but has not been observed in the Pacific slopes. North, its range is probably nearly coincident with the limit of large trees; such extreme of distribution does not seem to be gained until the latter part of May, and its coming must be immediately followed by pairing and nesting, as the eggs have been found at Fort Resolution by the middle of June. While I was collecting at Pembina, on the Red River of the North, latitude 49°, during the whole month of June the Redstarts were very abundant in the heavy timber of the river-bottom, in full song, pairing and nesting, and at the height of their sexual irritability. I never saw it in Arizona, nor have the later students of the ornithology of that Territory found it, though we have advices of its occasional appearance in New Mexico, and of its presence in considerable numbers in Colorado and Utah, where it unquestionably breeds at the higher elevations.

In general, the breeding range may be given as rather more than the northern half of the United States, and all that portion of British America which falls within the limits of its migration. It builds a neat, even an elegant nest, usually in an upright crotch formed by several small twigs, like the Least Flycatcher for instance, at an elevation of from five to twenty or more feet from the ground. Nests which I have examined varied greatly, as most birds' nests do, in the materials of which they were composed, though sufficiently similar to preserve their character of small compact structures, with neatly turned brim and deep cavity, about two and a half inches across out-

side, and the same in height. The material is chiefly fine and soft, such as plant-down and perfectly disintegrated vegetable fibre, and the nests built of such substances are exquisitely soft and homogeneous. There is usually, however, a considerable mixture of coarser fibrous material, such as bark-strips, with a lining of fine grasses, rootlets, in some cases hair, in others pine-needles.

A rather curious nest, taken at Racine, Wisconsin, by Dr. P. R. Hoy, and now preserved in the National Museum, is attached entirely to one side of an upright fork, and setting away from the support altogether, excepting a small part of its circumference, which reaches down into the crotch. Another remarkable nest, taken in Massachusetts by Mr. George O. Welch, and described by Dr. Brewer, is a reconstruction of one begun by a pair of Summer Warblers, and either abandoned by the originators, or from which they had been driven away. The Redstarts built upon this basis, constructing a nest of their own. The base was composed of the downy covering of the under side of fern-leaves, with a few herbaceous stems and leaves; within this was built an entirely distinct nest, composed of long slender strips of bark, pine-needles, and grass-stems. In a third nest, found by the same writer in Hingham, Mass., the more usual bark-strips were replaced by hempen fibres, thistle-down, bits of newspaper, and other matters. This nest was in a tree standing in an open space near a dwelling-house; another was in a swampy thicket, five feet from the ground; one of the northern nests Dr. Brewer notices was built in low willow-bushes.

The Redstart appears to lay usually only four eggs, this being the number in most of the nests I have seen; but five are often found. The ground-color of the shell is white, and this is quite thickly sprinkled over, but especially spotted at and around the larger end, with usual shades of brown, lilac, and purplish. They have been likened to those of the Summer Warbler, and there is probably nothing about them, or the nest either, that enables one to distinguish them with certainty from those of some other Sylvicolines. My measurements of several specimens at the Smithsonian give the range of variation in size from 0.60 × 0.49 to 0.70 × 0.51. Dr. Brewer's indicate rather smaller samples; he states that they vary in length from 0.55 to 0.68 of an inch, and in breadth from 0.45 to 0.53. Mr. Minot says that the "four or five eggs of each set usually average .65 × .50 of an inch"—a statement that exactly bears out my measurements, and is possibly deduced from them.

ADDENDUM TO CHAPTER XII.

The foregoing pages, in which the *Sylvicolidæ* are treated, account for very nearly all the species, real or nominal, of this family, which have been attributed by authors to North America. There remain, however, a few names, alleged or supposed to belong to *Sylvicolidæ*, which I have not been able to identify, or which indicate species wrongly ascribed to North America. These are as follows:—

Motacilla semitorquata, *Gm.* SN. i. 1788, 972, n. 112.—*Turt.* SN. i. 1806, 598.
Sylvia semitorquata, *Lath.* IO. ii. 1790, 542, n. 129.—*V.* OAS. ii. 1807, 43.—*Steph.* Gen. Zool. x. 1817, 594.
Sylvia semi-torquata, *V.* N. D. d'H. N. xi. 1817, 181.—*V.* Ency. Méth. ii. 1823, 445, n. 91.
Mniotilta semitorquata, *Gray,* G. of B. i. 1848, 197.
Figuier à demi-collier, *Buff.* "v. 316".
Half-collar Warbler, *Lath.* Syn. ii. pt. ii. 1783, 494, n. 124.
Half-collared Warbler, *Penn.* AZ. ii. 1785, 410, n. 311.—*Steph.* Gen. Zool. x. 1817, 594.
Fauvette à demi-collier, *V.* ll. cc.

HAB.—"Louisiana."

Motacilla fulva, *Gm.* SN. i. 1788, 973, n. 113.—*Turt.* SN. i. 1806, 598.
Sylvia fulva, *Lath.* IO. ii. 1790, 542, n. 130.—*V.* OAS. ii. 1807, 46.—*Steph.* Gen. Zool. x. 1817, 726.—*V.* N. D. d'H. N. xi. 1817, 188.—*V.* Ency. Méth. ii. 1823, 447, n. 98.
Mniotilta fulva, *Gray,* G. of B. i. 1848, 197.
Figuier à gorge jaune, *Buff.* "v. 317".
Orange-bellied Warbler, *Lath.* Syn. ii. pt. ii. 1783, 495, n. 125.—*Penn.* AZ. ii. 1785, 410, n. 312.
Fauvette à gorge jaune, *V.* l. c.

HAB.—"Louisiana." Possibly young or autumnal *Geothlypis trichas.*

Motacilla fusca, *Gm.* SN. i. 1788, 973, n. 114.—*Turt.* SN. i. 1806, 598.
Sylvia fusca, *Lath.* IO. ii. 1790, 543, n. 131.
Sylvia grisei collis, *V.* OAS. ii. 1807, 29, pl. 87.—*V.* N. D. d'H. N. xi. 1817, 187.—*Steph.* Gen. Zool. x. 1817, 685.—*V.* Ency. Méth. ii. 1823, 447, n. 97.
Mniotilta fusca, *Gray,* G. of B. i. 1848, 197.
Figuier brun-olive, *Buff.* "v. 318".
Olive-brown Warbler, *Lath.* Syn. ii. pt. ii. 1783, 495, n. 126.—*Penn.* AZ. ii. 1785, 411, n. 313.
Fauvette à gorge grise, *V.* ll. cc.
Grey-throated Warbler, *Steph.* l. c. (Not of earlier authors, which is *Mot. cana* Gm. = *Polioptila cærulea.*)

HAB.—"Louisiana." Vieillot says his *griseicollis* is the same as *fusca* of earlier authors, and assigns San Domingo and Porto Rico as habitat, besides "Louisiana".

Fauvette verdâtre de la Louisiane, *Buff.* "v. 162".
Black-cap Warbler *var.* **C,** *Lath.* Syn. ii. pt. ii. 1783, 417, n. 5.
Sylvia atricapilla, *δ, Lath.* IO. ii. 1790, 509, n. 6.
Sylvia virescens, *V.* OAS. ii. 1807, 42.—*Steph.* Gen. Zool. x. 1817, 650.
Sylvia viridicans, *V.* Ency. Méth. ii. 1823, 435, n. 56.
Greenish Warbler, *Steph.* l. c.
Fauvette verdatre, *V.* Ency. Méth. ii. 1823, 435.

"Bill dusky: top of the head blackish: hind part of neck deep ash-colour: sides and back pale brown, with a tinge of green: wings and tail blackish, edged with brownish green: above the eye a streak of white: throat white: under parts of the body gray. Inhabits Louisiana."

Sylvia pumilla, *V.* OAS. ii. 1807, 39, pl. 100.—*V.* N. D. d'H. N. xi. 1817, 239 (referred to *S. trochilus* var. Lath.).—*V.* Ency. Méth. ii. 1823, 467, n. 175 (ref. to Edw. pl. 278, f. 2).
Mniotilta pumila, *Gray,* G. of B. i. 1848, 196 (= V. OAS. pl. 100).
Sylvicola pumila, *Bp.* CA. i. 1850, 308.
Fauvette naine, *V.* l. c. 1807.
Pouillot nain, *V.* ll. cc. 1817 and 1823.

HAB.—North America.—See *antea*, p. 254, note.

Sylvia bicolor, *V.* OAS. ii. 1807, 31, pl. 90 *bis*.—*V.* N. D. d'H. N. xi. 1817, 167.—*Steph.* Gen. Zool. x. 1817, 665.—*V.* Ency. Méth. ii. 1823, 431, n. 41.
Mniotilta bicolor, *Gray,* G. of B. i. 1848, 196.
Fauvette bicolor, *V.* l. c. 1817.
Fauvette bicolore, *V.* l. c. 1823.
Bicoloured Warbler, *Steph.* l. c.

HAB.—North America. Description indicates a bird like *Dendræca cærulea* or *Polioptila cærulea.*

Motacilla æquinoctialis, *Gm.* SN. i. 1788, 972.
Sylvia æquinoctialis, *Lath.* IO. ii. 1790, 542, 127.—*V.* OAS. ii. 1807, 26, pl. 81.—*Steph.* Gen. Zool. x. 1817, 606.—*V.* N. D. d'H. N. xi. 1817, 205.—*V.* Ency. Méth. ii. 1823, 458, n. 141.
Trichas æquinoctialis, *Gray,* G. of B. i. 1848, 197.—*Bp.* CA. i. 1850, 310.
Geothlypis aequinoctialis, *Cab.* MH. i. 1850, 16.—*Scl.* Cat. AB. 1861, 27.—*Taylor,* "Ibis, 1864, 81" (Trinidad).—*Bd.* Rev. AB. 1865, 224.—*B. B. & R.* NAB. i. 1874, 296.
Sylvia delafieldii, *Towns.* Journ. Phila. Acad. vii. 1839, 153 ("California" or "Oregon").—*Aud.* OB. v. 1839, 307.
Trichas delafieldii, *Aud.* Syn. 1839, 65 ("Northern California").—*Aud.* BA. ii. 1841, 81, pl. 103.—*Gray,* G. of B. i. 1848, 197.
Trichas delafieldi, *Bp.* CA. i. 1850, 310 ("California").
Quid **Trichas delafieldii,** *Heerm.* Journ. Phila. Acad. ii. 1853, 263; PRRR. x. 1859, 40? (*G. trichas?*).
Geothlypis velatus, *Bd.* BNA. 1858, 243.
Figuier olive de Cayenne, *Buff.* "v. 315"; PE. 685, f. 1.
Equatorial Warbler, *Lath.* Syn. ii. pt. ii. 1783, 493, n. 122.
Fauvette olive, *V.* ll. cc.

HAB.—Cayenne, Trinidad, &c. Ascribed to North America by Vieillot and others.

Sylvia velata, *V.* OAS. ii. 1807, 22, pl. 74.—*V.* N. D. d'H. N. xi. 1817, 232.—*V.* Ency. Méth. ii. 1823, 434, n. 54.
Trichas velata, *Sw.* Class. B. ii. 1837, 247.—*Bp.* CA. i. 1850, 310.—*Burm.* "Syst. Uebers. iii. 1856, 115".
Trichas velatus, *Gray,* G. of B. i. 1848, 197.
Geothlypis velatus, *Cab.* MH. i. 1850, 16.—*Scl.* Cat. AB. 1861, 27.—*Bd.* Rev. AB. 1865, 223.
Geothlypis æquinoctialis *var.* **velata,** *B. B. & R.* NAB. i. 1874, 296.
Tanagra canicapilla, *Sw.* "Zool. Ill. iii. 18—, pl. 174".
Sylvia canicapilla, *Pr. Max.* "Beit. iii. 18—, 701" (Brazil).
Trichas canilcapilla, *Lesson,* RZ. iii. 1840, 134.
Fauvette voilée, *V.* ll. cc.

HAB.—Brazil. Ascribed to North America by Vieillot.

Aegithina leucoptera.

Sylvia leucoptera, *V.* OAS. ii. 1807, 28, pl. 84.
Aegithina leucoptera, V.—*Bp.* CA. i. 1850, 311.
Mniotilta leucoptera, *Gray,* G. of B. i. 1848, 196.

Not American, and not a Sylvicoline.

CHAPTER XIII.—TANAGERS

Fam. TANAGRIDÆ

TANAGERS are amongst the most characteristic birds of the Western Hemisphere, being strictly confined to America, like their near relatives the *Sylvicolidæ*—like the *Icteridæ*, another Oscine family—like the Clamatorial family *Tyrannidæ*, or the Picarian tribe of the Hummingbirds, *Trochilidæ*. Though poorly represented in North America, by only a single genus, *Pyranga*, they abound in species and individuals in the warmer parts of both continents. More than three hundred species are recognized by late authorities, and these are ranged under some sixty or seventy of the genera of modern systematists, or schedule-draughters. These birds are famed for the beauty and variety of their coloration, being among those most frequently exhibited in the show-cases of the bird-stuffers and milliners, as well as on the head-wear of fashionable ladies, who have degenerated into walking advertisements of wretched taxidermy in their rage for barbaric ornamentation of their persons. The style used to be to wear plumes selected either for their beauty of coloration or their gracefulness of shape; but the itch of savagery has broken out with aggravated symptoms, to be appeased with nothing short of an ornithological museum. I once counted the feathers of no fewer than fifteen different kinds of birds on the dress of an Indian squaw; but then her alleged husband had one necklace of grizzly-bear claws and another of human finger-tips; and circumstances alter cases, you know. It seemed to me less singular than the case of another woman whom I examined with some care shortly afterward, on whose bosom rested a gilt tipped tiger's-claw, from whose ears depended two claws of the same animal, in whose hair nestled the greater part of the external anatomy of the bird known as the shitepoke, and to whose loins a live poodle-dog was tied by a long blue string. Such a toilet, I think, would be still more effective with the rouge and lily-white in streaks instead of layers, and a fish-bone through the nose.

It is not that Tanagers are not highly ornamental, but that they are sometimes out of place.—I have already remarked (p. 196) upon the intimacy of relationship between these birds and the *Sylvicolidæ* and *Fringillidæ*, and I know of no characters whereby a family *Tanagridæ* can be distinguished from these and one or two other recognized families of nine-primaried *Oscines*. Tanagers ordinarily lack the truly conic shape of the bill and angulation of the commissure so often seen in *Fringillidæ;* but in both families the form of bill is endlessly varied. The bill is usually stouter and more conoidal than it is in the *Sylvicolidæ*, but the exceptions to any such assumed rule are too numerous to warrant its recogition as a means of diagnosis. The wings, tail, and feet offer nothing distinctive; there are nine primaries, twelve rectrices, and a thoroughly Oscine structure of the tarsal envelope in both of the reputed families, while the proportionate lengths and details of shape of these members are distinctive of neither group.

The North American representative of the family, *Pyranga*, is easily distinguished from any other genus of this country, however the case may be inside its own family ranks.

A beautiful Tanager of the genus *Euphonia* has been ascribed to the United States, but on insufficient evidence of its actual occurrence over our border. It was originally described by the Prince Bonaparte as a bird of Mexico, and shortly afterward figured by J. P. Giraud as one of his sixteen new species of birds of "Texas". We are likely to hear of it again, however, at any moment, as an inhabitant of the valley of the Lower Rio Grande or that of the Lower Colorado.*

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* **Euphonia elegantissima.—Cœlestial Tanager.**

Pipra elegantissima, *Bp.* PZS. 1837, 112 (Mexico).

Euphonia elegantissima, *Gray*, "G. of B. —, App. 17".—*Cass.* Pr. Phila. Acad. iv. 1848, 90 (Xalapa).—*Scl.* "Contr. Orn. 1851, 83".—*Bd.* Rep. Great Salt Lake, 1852, 330.—*Scl.* PZS. 1855, 66.—*Scl.* PZS. 1856, 272 (synonyms, &c.).—*Scl.* PZS. 1858, 303 (La Parada).—*Bd.* BNA. 1858, 304; ed. of 1860, Atlas, pl. 71, f. —.—*Scl.* PZS. 1859, 364, 378.—*S. & S.* Ibis, 1859, 16.—*Cab.* J. f. O. 1860, 331 (Costa Rica).—*Scl.* Cat. AB. 1861, 56.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 98 (Costa Rica).—*Scl.* PZS. 1870, 185 (Veragua).—*Orton*, Am. Nat. iv. 1871, 714.

Euphona elegantissima, *Bp.* CA. i. 1850, 232.—*Gieb.* Nomencl. Av. 1874, 135.

Euphonia cœlestis, *Less.* Rev. Zool. 1839, 42.—*Dubus*, "Esq. Ornith. 1850, pl. 14" (others quote "pl. 8").

Azure-capped Manakin, Pipra galericulata, *Giraud*, Sixt. Sp. Tex. B. 1841, not paged, folio 21, n. 10. pl. 5, f. 2.

HAB.—Mexico and Central America. Said to have occurred in Southern Texas and near San Francisco, Cal.

Genus PYRANGA Vieillot

Tanagra, in part, of early authors.
Piranga, *Vieillot,* OAS. i. 1807, p. iv.—*Gray,* Handlist, ii. 1870, 60, n. 1731.
Pyranga, *Vieillot,* "Analyse, 1816, 32".—*V.* Gal. Ois. i. 1834, 111.—*Scl.* PZS. 1856, 123.—*Bd.* BNA. 1858, 300.—*B. B. & R.* NAB. i. 1874, 432.
Phœnisoma, *Sw.* Class. B. ii. 1837, 284.
Phœnisoma, *Bp.*
Phoenicosoma, *Cab.* "Arch. f. Naturg. xiii. 1847, 316"; Mus. Hein. i. 1850, 24.

CHARS.—Bill stout, turgid, conoidal, usually notched at the tip, and with one or more denticulations of the cutting edge of the upper mandible near the middle of the commissure. Rictal bristles well developed. Nostrils basal, the frontal antiæ reaching them. Wings lengthened and pointed, the first four feathers subequal and longest. Tail moderate in length, shorter than the wings, slightly forked, but nearly even. Tarsus not longer than the middle toe; lateral toes about equal, the outer coherent with the middle by nearly all of the length of its basal joint. Sexes more or less unlike in color; red usually prevailing in the male sex. Habits migratory, insectivorous, arboreal; voice not musical. Eggs spotted (as far as known).

Four species of this beautiful genus inhabit the United States, three of them representing as many of the sections into which the genus is divisible according to pattern of coloration. Numerous others are found in the warmer parts of America. These birds have been specially studied of late by Mr. Robert Ridgway,* who has analyzed their characters—more particularly those of the group which includes *P. æstiva*—with his usual discrimination.

One of the best known of these birds is the Scarlet Tanager, *Pyranga rubra*,† whose encrimsoned body, contrasting with wings

* On the Uniformly Red Species of *Pyranga*, with Description of a New North American Species or Variety [*cooperi*]. < Proc. Acad. Nat. Sci. Phila. June, 1869, pp. 129–133. See also the excellent schedule of the whole genus, by the same talented writer, in the History of North American Birds, vol. i. pp. 432, 435 (1874).

† **Pyranga rubra.—Scarlet Tanager.**

Tanagra rubra, *L.* SN. i. 1766, 314, n. 3 (from *Cardinalis canadensis* Briss. iii. 48, pl. 2, f. 5).—*Bodd.* Tabl. PE. 1783, 10, pl. 156, f. 1.—*Gm.* SN. i. pt. ii. 1788, 889, n. 3.—*Lath.* IO. i. 1790, 420, n. 3.—*Turt.* SN. i. 1806, 545.—*Wils.* AO. ii. 1810, 42, pl. 11, f. 3, 4.—*Bp.* Journ. Phila. Acad. iv. 1824, 53.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 105.—*Fox,* Newc. Mus. 1827, 158.—*Less.* Tr. Orn. 1831, 465.—*Nutt.* Man. i. 1832, 465.—*Aud.* OB. iv. 1838, 388, pl. 354, f. 3, 4.—*Peab.* Rep. Orn. Mass. 1839, 319.—*Thomps.* Vermont, 1853, App. 24.—*Read,* Pr. Phila. Acad. vi. 1853, 400.

Pyranga rubra, *V.* "OAS. i. 1807, p. iv. pl. 1, f. 12 (head)".—*S. & R.* FBA. ii. 1831, 273, fig.—*Jard.* ed. Wils. i. 1832, 192.—*Bp.* CGL. 1838, 35.—*D'Orb.* Ois. Cuba, 1839, 78.—*Aud.* Syn. 1839, 136.—*Aud.* B. Amer. iii. 1841, 226, pl. 209.—*Gosse,* B. Jam. 1847, 235.—*Gir.* BLI. 1844, 135.—*Bp.* CA. i. 1850, 241.—*Woodh.* Rep. Zuñi R. 1853, 82.—*Hoy,* Pr. Phila. Acad. vi. 1853, 383 (Wisconsin).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 585.—*Pratten,* ibid. 605.—*Scl.* PZS. 1855, 156 (Bogotá); 1856, 123 (synonymy, &c.).—*Putn.* Pr. Ess. Inst. i. 1856, 212.—*Haym.* Pr. Phila. Acad. viii. 1856, 292 (Indiana).—*Maxim.* J. f. O. vi. 1858, 270.—*Scl.* PZS. 1858, 73 (Rio Napo, Ecuador).—*Bd.* BNA. 1858, 30.—*Willis,*

and tail as black as night, makes him only too conspicuous an object, the never-failing bait to the greed of the mere collector

Smiths. Rep. for 1858, 1859, 283 (Nova Scotia).—*Martens*, J. f. O. 1859, 215 (Bermudas).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 331 (New Granada).—*Gundl.* J. f. O. 1861, 328.—*Scl.* CAB. 1862, 80 (Bogotá).—*Verr.* Pr. Ess. Inst. iii. 1862, 148.—*Albrecht*, J. f. O. 1862, 197 (Jamaica).—*Tayl.* Ibis, iv. 1862, 128 (Florida).—*Boardm.* Pr. Bost. Soc. ix. 1862, 125 (Maine).—*March*, Pr. Phila. Acad. xv. 1863, 296 (Jamaica).—*Scl.* PZS. 1864, 350 (Panama).—*Allen*, Pr. Ess. Inst. iv. 1864, 65.—*Hoy*, Smiths. Rep. for 1864, 1865, 438 (Missouri).—*Dress.* Ibis, 2d ser. i. 1865, 479 (El Paso, Tex.).—*McIlwr.* Pr. Ess. Inst. v. 1866, 86 (Canada West).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 286; ix. 1868, 99 (Costa Rica).—*Coues*, Pr. Ess. Inst. v. 1868, 275.—*Coues*, Pr. Bost. Soc. xii. 1868, 113 (South Carolina).—*Jackson*, Am. Nat. ii. 1868, 490.—*Sumich.* Mem. Bost. Soc. i. 1869, 550 (Vera Cruz).—*v. Frantz.* J. f. O. 1869, 229 (Costa Rica).—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19.—*Salv.* PZS. 1870, 187 (Veragua).—*Bruhin*, Zool. Gart. 1871, 17 (Wisconsin).—*Trippe*, Pr. Ess. Inst. vi. 1871, 117 (Minnesota).—*Salv.* Ibis, 3d ser. ii. 1872, 316 (Chontales).—*Gundl.* J. f. O. 1872, 421 (Cuba) —*Mayn.* Pr. Bost. Soc. xiv. 1872, 370.—*Scott.* Pr. Bost. Soc. xv. 1872, 223.—*Coues*, Key, 1872, 111.—*Allen*, Bull. MCZ. iii. 1872, 175 (Eastern Kansas).—*Snow*, B. Kans. 1873, 3.—*Trippe*, Pr. Bost. Soc. xv. 1873, 235.—*Packard*, Am. Nat. viii. 1874, 271.—*Coues*, BNW. 1874, 82.—*B. B. & R.* NAB. i. 1874, 435, pl. 20, f. 7, 8.—*Brew.* Pr. Bost. Soc. xvii. 1875, 441.—*Gentry*, Life-Hist. i. 1876, 177.—*Merr.* Trans. Conn. Acad. iv. 1877, 27.—*Minot*, B. N. Engl. 1877, 134.

Piranga rubra, *Gray*, Handlist, ii. 1870, 60, n. 6835.

Pyrouga rubra, *Bruhin*, Zool. Gart. xii. 1872, 221.

Phœnisoma rubra, *Sw.* Class. B. ii. 1837, 284.

Phoenicosoma rubra, *Cab.* MH. i. 1850, 24.—*Gundl.* J. f. O. 1855, 477; 1861, 409 (Cuba).

Phoenicosoma rubrum, *Gieb.* Nomenc. Av. iii. 1876, 110.

? Tanagra olivacea, *Gm.* SN. i. 1788, 889, n. 6 (in part, perhaps. Based on the *Olivet* of Buff. iv. 269, and the *Olive Tanager* of Lath. Syn. ii. pt. i. 218, n. 4, and Penn. A Z. ii. 1785, 369, n. 238. "Cayenne and New York").

Pyranga erythromelas, *V.* N. D. d'H. N. 2d ed. xxviii. 1819, 293.

Pyranga erythromelas, *V.* Ency. Méth. ii. 1823, 800.

Cardinal de Canada, Cardinalis canadensis, *Briss.* Orn. iii. 1760, 48, pl. 2, f. 5 (sole basis of *Tanagra rubra* L.).

Tangara du Canada, *Buff.* "vii. 350"; PE. 156, f. 1.—*Less.* Man. i. 1828, 164. [Compare PE. 127, f. 1.]

Scarlet Sparrow, *Edw.* pl. 343.

Red Tanager, *Lath.* Syn. ii. pt. i. 1783, 217, n. 3.

Canada Tanager, *Penn.* A Z. ii. 1785, 369, n. 237.

? Olive Tanager, *Lath.* Syn. ii. pt. i. 1783, 218, n. 4.—*Penn.* A Z. ii. 1785, 369, n. 238. ("New York." A basis of *T. olivacea* Gm.; may be ♀ of this or *T. æstiva.*)

Pyranga rouge et noir, *V.* l. c. 1823.—*D'Orb.* l. c.

Scarlet Black-winged Tanager, *S. & R.* l. c.

Scarlet Tanager *or* **Black-winged Red-bird,** *Aud.* l. c.

Tangara écarlate, *Le Moine*, Ois. Canad. 1861, 278.

HAB.—Eastern Province of North America, strictly. United States and adjoining border of the British Provinces (Lake Huron, lat. 49° N.—not 59°, as misprinted in my BNW.). West to the borders of the Plains (Kansas and Indian Territory; El Paso, *Heermann*). Cuba. Jamaica. Mexico. Central America and South America to Ecuador. Breeds throughout its United States range. Winters extralimital. Not common north of Massachusetts.

NOTE.—There is a hitch in the nomenclature of our two Eastern Tanagers, if we must take Linnæus at 1758. He applied the name *rubra* to each of them in 1766, calling the Scarlet Tanager *Tanagra rubra* on p. 314, and the Summer Redbird *Muscicapa rubra* on p. 326. This would leave the term *rubra* as it stands now, for the Scarlet Tanager; but he had before called the Summer Redbird *Fringilla rubra*, in 1758, p. 181. In strictness, therefore, the name *rubra* should stand in place of *æstiva*, for the Summer Redbird. But this is a case in which it seems desirable to relax the stringency of a rule which, if here put in force, would result in a confusing change of nomenclature.

and dealer in bird-skins. I hold this bird in particular, almost superstitious, recollection, as the very first of all the feathered tribe to stir within me those emotions that have never ceased to stimulate and gratify my love for birds. More years have passed than I care to remember since a little child was strolling through an orchard one bright morning in June, filled with mute wonder at beauties felt, but neither questioned nor understood. A shout from an older companion—"There goes a Scarlet Tanager!"—and the child was straining eager, wistful eyes after something that had flashed upon his senses for a moment as if from another world, it seemed so bright, so beautiful, so strange. "What is a Scarlet Tanager?" mused the child, whose consciousness had flown with the wonderful apparition on wings of ecstasy; but the bees hummed on, the scent of flowers floated by, the sunbeam passed across the greensward, and there was no reply—nothing but the echo of a mute appeal to Nature, stirring the very depths with an inward thrill. That night the vision came again in dreamland, where the strangest things are truest and known the best; the child was startled by a ball of fire, and fanned to rest again by a sable wing. The wax was soft then, and the impress grew indelible. Nor would I blur it if I could—not though the flight of years has borne sad answers to reiterated questionings—not though the wings of hope are tipped with lead and brush the very earth, instead of soaring in scented sunlight. . . .

The Summer Redbird, *Pyranga æstiva*, though chiefly Eastern in its distribution within the United States, is represented in the Colorado Basin by a variety recently discriminated by Mr. Ridgway; and the same region affords two other species of this brilliant genus, the histories of which I hope to give with precision and sufficient detail.

Western Summer Redbird

Pyranga æstiva cooperi

a. æstiva

Fringilla rubra !, *L.* SN. i. 10th ed. 1758, 181, n. 13 (from Cates. i. 56).

Muscicapa rubra, *L.* SN. i. 12th ed. 1766, 326, n. 8 (Cates. i. 56; Edw. 63, pl. 239, f. 2; Briss. ii. 432).

Tanagra æstiva [*or* aestiva], *Gm.* SN. i. 1788, 889, n. 25.—*Lath.* IO. ii. 1790, 422, n. 7.—*Turt.* SN. i. 1806, 545.—*Wils.* AO. i. 95, pl. 6, f. 3.—*Bp.* Journ. Phila. Acad. 1824, 53.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 105.—*Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 56.—*Nutt.* Man. i. 1832, 469.—*Aud.* OB. i. 1831, 232; v. 1839, 518; pl. 44.—*Read,* Pr. Phila. Acad. vi. 1853, 400.—*Gosse,* Alabama, 1859, 36.

Pyranga æstiva [*or* aestiva], *V.* N. D. d'H. N. 2d ed. xxviii. 1819, 291; Ency. Méth. ii. 1823, 799.—*Bp.* PZS. 1837, 117 (Guatemala).—*Bp.* CGL. 1838, 35.—*D'Orb.* Ois. Cuba, 1839, 76.—*Aud.* Syn. 1839, 136.—*Aud.* BA. iii. 1841, 222, pl. 208.—*Linsley*, Am. Journ. Sci. xliv. 1843, 261 (Connecticut).—*Cass.* Pr. Phila. Acad. iv. 1848, 90 (Xalapa).—*Bp.* CA. i. 1850, 241 (includes *hepatica*).—*Burnett*, Pr. Bost. Soc. iv. 1851, 116.—*Wailes*, Rep. Missis. 1854, 319.—*Scl.* PZS. 1855, 156 (Bogotá).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 585.—*Pratten*, ibid. 605.—*Putn.* Pr. Ess. Inst. i. 1856, 224.—*Scl.* PZS. 1856, 123 (synonymy, &c.); 142 (Chiriqui); 303 (Cordova); 1858, 73 (Ecuador); 358 (Honduras); 1859, 364 (Xalapa); 377 (Oaxaca).—*Bd.* BNA. 1858, 301.—*S. & S.* Ibis, i. 1859, 15 (Guatemala).—*Martens*, J. f. O. 1859, 215 (Bermudas).—*Scl.* PZS. 1860, 65 (Pallatanga); 293 (Esmereldas).—*Taylor*, Ibis, ii. 1860, 111 (Honduras).—*Cass.* Pr. Phila. Acad. xii. 1860, 140 (Isthmus Darien).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Gundl.* J. f. O. 1861, 328 (Cuba).—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 297 (New Granada).—*Scl.* CAB. 1861, 80.—*Barn.* Smiths. Rep. for 1860, 1861, 436 (Pennsylvania).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 409.—*Scl.* PZS. 1864, 350 (Panama).—*Allen*, Pr. Ess. Inst. iv. 1864, 83.—*Hoy*, Smiths. Rep. for 1864, 1865, 438 (Missouri).—*Dress.* Ibis, 2d ser. i. 1865, 479 (San Antonio).—*Lawr.* Ann. Lyc. N. Y. viii. 1865, 175 (Chiriqui); viii. 1866, 286 (New York).—*Scl.* PZS. 1867, 139 (Veragua); 278 (Mosquito Coast).—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 99 (Costa Rica).—*Coues*, Pr. Bost. Soc. xii. 1868, 113 (South Carolina).—*Coues*, Pr. Ess. Inst. v. 1868, 275 (New England).—*Butch.* Pr. Phila. Acad. xx. 1868, 149 (Laredo, Tex.).—*Allen*, Am. Nat. iii. 1869, 578.—*Ridgw.* Pr. Phila. Acad. xxi. 1869, 130 (critical; "N. to Nova Scotia").—*v. Frantz.* J. f. O. 1869, 299 (Costa Rica).—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19.—*Coop.* Am. Nat. iii. 1869, 478.—*Sumich.* Mem. Bost. Soc. i. 1869, 548 (Vera Cruz).—*Mayn.* Guide, 1870, 109 (Massachusetts).—*S. & S.* PZS. 1870, 836 (Honduras).—*Salv.* PZS. 1870, 187 (Veragua).—*Abbott*, Am. Nat. iv. 1870. 536.—*Allen*, Am. Nat. iv. 1870, 56.—*Coues*, Pr. Phila. Acad. xxiii. 1871, 21 (North Carolina).—*Wyatt*, Ibis, 3d ser. i. 1871, 326 (Colombia).—*Gundl.* J. f. O. 1872, 421 (Cuba).—*Scott*, Pr. Bost. Soc. xv. 1872, 223.—*Salv.* Ibis, 3d ser. ii. 1872, 316 (Chontales).—*Coues*, Key, 1872, 111, fig. 52[a], pl. 2, f. 19, 20.—*Snow*, B. Kans. 1873, 5.—*Ridgw.* Am. Nat. vii. 1873, 199; viii. 1874, 201.—*Merr.* Am. Nat. viii. 1874, 87.—*Coues*, BNW. 1874, 82.—*Merr.* Trans. Conn. Acad. iv. 1877, 27 (Connecticut and Rhode Island).—*McCauley*, Bull. U. S. Geol. Surv. iii. 1877, 662 (Wolf and Canadian Rivers, Texas).—*Minot*, B. N. Engl. 1877, 136.

Pyranga æstiva *var.* **æstiva,** *B. B. & R.* NAB. xvii. 1875, 441, pl. 20, f. 5, 6.

Piranga æstiva, *Gray*, Handlist, ii. 1870, 60, n. 6836.

Phœnisoma æstiva, *Sw.* Class. B. ii. 1837, 284.—*Cab.* J. f. O. 1860, 329 (Costa Rica).

Phœnicosoma æstiva, *Cab.* Mus. Hein. i. 1850, 25.—*Gundl.* J. f. O. 1855, 477 (Cuba); 1861, 409 (Cuba).

Phœnicosoma æstivum, *Gieb.* Nomencl. Av. iii. 1876, 109.

Tanagra rudis, *Sparrm.* "Mus. Carls. 178–, pl. 94".

Tanagra coccinea, *Bodd.* Tabl. PE. 1783, 46 (name based on PE. 741).

Pyranga coccinea, *Gray*, "G. of B. ii. 184–, 363".

Loxia virginica, *Gm.* SN. i. 1788, 849, n. 58 (based on the *Yellow-bellied Grosbeak* of Lath. and Penn., male changing).—*Daudin*, Tr. Orn. ii. 1800, 383.—*Turt.* SN. i. 1806, 518.

Tanagra mississipensis, *Gm.* SN. i. 1788, 889, n. 23 (based on Buff. "iv. 252"; PE. 741).—*Turt.* SN. i. 1806, 545.—*Licht.* "Verz. Doubl. 30".—*Brehm*, Hdbh. Stub. u. Hausvög. 1832, 392.

Pyranga mississipensis, *Maxim.* J. f. O. 1858, 272.

Tanagra variegata, *Lath.* IO. ii. 1790, 421, n. 6 (male changing).

Merula marilandica, *Bartr.* Trav. Fla. 1791, 290 bis.

?Pyranga livida, *Sw.* "Philos. Mag. i. 1827, 438, n. 70" (*fide* Gray and Cabanis).

Summer Redbird, *Edw.* "Gl. —, 60, chap. 29, pl. 239, f. 2".—And of authors.

Summer Red-bird, Muscicapa rubra, *Catesby*, Car. i. 1771, 56, pl. 56.

Gobe-mouche rouge de la Caroline, Muscicapa Carolinensis rubra, *Briss.* Orn. ii. 1760, 432. (Quotes *Fringilla rubra* Klein. Av. 97, n. 9.)

Tangara du Mississipi, *Buff.* "iv. 252"; *or*, "v. 63"; *or*, "vii. 353" (PE. 741).

Mississipi Tanager, *Lath.* Syn. ii. pt. i. 1783, 218, n. 5.

Summer Tanager, *Penn.* AZ. ii. 1785, 369, n. 236.

Yellow-bellied Grosbeak, *Lath.* Syn. ii. pt. i. 1783, 125, n. 22.—*Penn.* AZ. ii. 1785, 351, n. 215.

Variegated Tanager, *Lath.* Syn. ii. pt. i. 1783, 219, n. 5, pl. 46.

Red Bird, *Carver*, Trav. ed. of 1796, 315.
Pyranga rouge, *V.* l. c.—*D Orb.* l. c.
Mississipimerle, *Brehm*, l. c.
Tangara vermillon, *Le Moine*, Ois. Canad. 1861, 280.

Hab.—Eastern Province of the United States. West only to Kansas, the Indian Territory, and Texas, being replaced beyond by var. *cooperi*. North regularly to the Connecticut Valley (*Linsley, Merriam*), casually to Massachusetts (*Jillson*, as quoted by various authors), and even Nova Scotia (*auct. Ridgway*, spec. in Nat. Mus.). Cuba. Jamaica. Eastern Mexico. Central America, and South America to Ecuador and Peru. Breeds throughout its United States range. Winters wholly extralimital.

b. cooperi

Pyranga æstiva, *? Woodh.* Rep. Zuñi R. 1853, 82 (probably, in part at least).—*? Henry*, Pr. Phila. Acad. vii. 1855, 312 (New Mexico); xi. 1859, 106 (New Mexico).—*Coop.* Pr. Cal. Acad. 1861, 162 (Arizona).—*Coues*, Ibis, 2d ser. i. 1865, 159 (New Mexico).—*Coues*, Pr. Cal. Acad. xviii. 1866, 71 (Arizona, in part).
Pyranga hepatica, *Coues*, Pr. Phila. Acad. xviii. 1866, 71 (excl. syns. In part. Intended for true *hepatica*, but wrongly includes the type-specimens of var. *cooperi*).
Pyranga cooperi, *Ridgw.* Pr. Phila. Acad. xxi. 1869, 130, fig. (New Mexico and Southern Rocky Mountains).—*Coop.* B. Cal. i. 1870, 142.
Piranga cooperi, *Gray*, Handlist, ii. 1870, 61, n. 6847.
Pyranga æstiva *var.* **cooperii,** *Coues*, Key, 1872, iii. fig. 52 *b*.
Pyranga æstiva b. cooperi, *Coues*, BNW. 1874, 82.
Pyranga æstiva *var.* **cooperi,** *B. B. & R.* NAB. i. 1874, 444, pl. 20, f. 1, 2.—*Hensh.* Rep. Orn. Specs. 1874, 60 (Colorado); 108 (Arizona).—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. "1875" = 1876, 239, pls. 2 (♂) and 3 (♀).

Hab.—Southern portion of the Middle Province of the United States, and southward through Western Mexico.

Ch. sp.— ♂ *Rubra, dorso aliquantulum obscuriore, remigibus intus fuscis.* ♀ *Flavo-olivacea, subtus ochraceo-flava, remigibus intus fuscis.* ♂ ♀ *Major P. æstivâ, rostro robustiore, alis caudaque longioribus.*

♂, adult: Red, more rosy or more vermilion according to age, season, or vigor, paler below than above, the back rather darker than the head. Tail-feathers about like the back. Inner webs of the wing-quills and ends of the longer ones fuscous. Rather larger than typical *æstiva*, the wings and tail longer, the bill rather larger and inclining to be of a darker color. Length, 8–8½; extent, 13–13½; wing about 4; tail about 3⅜; bill, ¾–⅞; tarsus, ⅝.

♀, adult: Yellowish-olive above, buffy-yellow below; tail nearly like the back; wings fuscous, edged with the color of the back. Rather less than the male.

The young male resembles the female. Males changing are irregularly patched with the colors of the two sexes.

This form is extremely near true *æstiva*, and some of the diagnoses which have been prepared seem to rather force the distinguishing marks. These consist in the rather superior size, seen chiefly in the dimensions of length and extent, the tail being on an average about half an inch longer than that of *P. æstiva*, and the wing differing not quite so much. The bill is rather larger, and especially longer, nearly or quite equalling the length of the tarsus, instead of decidedly less. Specimens from Texas and Middle Mexico are conceded to be intermediate.

COOPER'S Tanager had been noticed by several observers who considered it identical with the common Summer Redbird, before its peculiarities were pointed out by Mr. Ridgway. The basis of his original description was a pair of adult birds, male and female, which I collected on the Rio Grande, near Albuquerque, in June, 1864; and from the same specimens the handsome plates which illustrate Mr. Henshaw's report above quoted were prepared. Dr. Cooper had previously found the bird to be "quite common" at Fort Mojave after the latter part of April, among the tall cottonwoods along the Colorado River. It has also been noticed in Arizona by Mr. Henshaw, who found it on the Gila River, and among the San Francisco Mountains. The bird unquestionably breeds in Arizona and New Mexico, and in fact these Territories represent nearly its northern limit; Mr. Henshaw, however, records a specimen procured at Denver, Colorado. Southward, the bird is said to extend along the west coast of Mexico to Colima. The notes that we possess respecting its habits are fragmentary; and, as far as they go, indicate no difference in such regard from the ordinary Summer Redbird.

The Hepatic Tanager

Pyranga hepatica

Pyranga hepatica, *Sw.* "Philos. Mag. i. 1827, 438, n. 71".—*Scl.* PZS. 1856, 124 (synonymy, &c.); 1857, 213 (Orizaba); 1858, 303 (Parada); 1859, 364 (Xalapa); 377 (Oaxaca).—*Bd.* BNA. 1858, 302; atlas to ed. of 1860, pl. —.—*Kenn.* PRRR. x. 1859, Whipple's Route, Birds, 30, pl. 31 (San Francisco Mountains, Arizona).—*Henry,* Pr. Phila. Acad. 1859, 106 (New Mexico).—*S. & S.* Ibis, 1859, 15 (Guatemala).—*Scl.* PZS. 1864, 173 (City of Mexico).—*Coues,* Pr. Phila. Acad. 1866, 71 (Fort Whipple, Arizona. In part; includes *cooperi*).—*Salv.* PZS. 1867, 139 (Veragua).—*Ridgw.* Pr. Phila. Acad. 1869, 132 (monographic).—*Coop.* B. Cal. i. 1870, 144, figs.—*Coues,* Key, 1872, 112, fig. 53.—*Brew.* Pr. Bost. Soc. xvi. 1873, 108 (eggs?).—*B. B. & R.* NAB. i. 1874, 440, pl. 20, f. 9, 10; iii. 1874, 508 (eggs?).—*Hensh.* Rep. Orn. Specs. 1874, 108 (Southern Arizona).—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. "1875" = 1876, 237.

Piranga hepatica, *Gray,* Handlist, ii. 1870, 60, n. 6838.

Phoenicosoma hepatica, *Cab.* Mus. Hein. i. 1850, 25.

Phoenicosoma hepaticum, *Gieb.* Nomencl. Av. iii. 1876, 110.

Pyranga azaræ, *Woodh.* Rep. Zuñi R. 1853, 82 (San Francisco Mountains, Arizona; first introduced to U. S. fauna. Not of authors).

Tanagra dentata, *Licht.* "Mus. Berol."

Liver-colored Tanager, *Coop.* l. c.

Hepatic Tanager, *Coues,* l. c.

HAB.—Southern Rocky Mountain region of the United States (New Mexico and Arizona). Southward through Mexico to Guatemala.

CH. SP.— ♂ ♀ *Rostro nigro-plumbeo, tomio maxillari dentato.* ♂ *Dorso griseo-fusco rubricato, pileo brunneo-rubro, alis caudâque fuscis rubro-limbatis; infrà rubra, lateribus obscurioribus.*

♀ *Griseo olivacea, alis caudâque fuscis, pileo, uropygio, marginibusque alarum et caudæ flavicantibus; infrà flavicans, lateraliter obscurior.*

♂, adult: Upper parts brownish-ashy, intimately mixed with dull red; top of the head, upper tail-coverts, and edgings of the wings and tail brighter brownish-red. Inner webs and ends of the wing-quills dusky; tail-feathers throughout decidedly tinged with red. Sides of the head like the back; edges of eyelids red. Below bright red, the sides and flanks shaded with the color of the back, many feathers often also with ashy skirting. Bill and feet blackish-plumbeous, the cutting edge of the upper mandible furnished with a tooth more prominent than in most species. Length about 8 inches; wing, 4; tail, 3½; bill, ⅝; tarsus, ⅝.

FIG. 45.—Hepatic Tanager, nat. size.

♀, adult: Bill and feet as in the ♂. Upper parts greenish-olive, with an ashy-gray tinge, the crown and rump clearer and more yellowish-olive. Sides of the head like the back. Beneath yellow, clear and nearly pure medially, shaded on the sides with the color of the back, sometimes brightening almost into orange on the throat. Quills and tail fuscous, with olivaceous-yellow edgings, the former darker than the latter.

Young ♂: Like the ♀; in males changing, the characters of the two sexes are confused.

Very young: There is an earlier *streaky* stage, before the assumption of a plumage like that of the female. The upper parts are grayish-brown with an olive tinge, the lower parts grayish-white with a yellowish shade, both everywhere streaked with dusky. Wings and tail like those of the adult ♀, but the former with ochraceous bands across the ends of the greater and middle coverts.

DURING Capt. L. Sitgreaves's expedition down the Zuñi and Colorado Rivers—an excursion well known to ornithologists through the important article on birds which forms part of the published report—Dr. S. W. Woodhouse observed this beautiful Tanager in the San Francisco Mountains, and secured a full-plumaged male, adding to the then recognized fauna of the United States a species long before described by Mr. Swainson as a bird of Mexico. In 1858, Baird recorded a second specimen from Fort Thorn, New Mexico; and, in 1866, I wrote of the bird as a summer resident in the vicinity of Fort Whipple, Arizona, where it arrives during the latter part of April. In 1874, Dr. Brewer spoke of Woodhouse's original as the only specimen known at that time to have been found within the limits of the United States, adding, by a still more curious lapse,

that the species "probably" extends into the mountainous portions of the United States.

Meanwhile, however, in 1873, Mr. Henshaw had been busy with birds in Arizona, and had taken a female specimen at Camp Apache, Arizona, as noted by Mr. Ridgway in the appendix of the work last mentioned. There this Tanager was not rare; perhaps half a dozen individuals were seen in the course of one afternoon, in a grove of oaks that skirted some pine woods. The birds were very shy, and seemed to be gleaning insects amidst the foliage of the oaks. The following year, when Mr. Henshaw was again upon the spot, he made the Tanager out to be an abundant inhabitant of the pineries, and his observations represent nearly all that we know of its habits. At the date of his enquiries into its mode of life, July 12, it was doubtless nesting; but he was not successful, after a long search, in discovering the nest, though he carefully watched the birds as they moved about the tops of the pines in their search for insects, occasionally sallying out to capture them on the wing. He heard no song, nor indeed any notes whatever, excepting the call-note of both sexes, resembling a repetition of the syllables *chuck*, *chuck*. On the 21st of the same month, young just from the nest were taken, in oak woods near Rock Cañon; and the Tanagers were seen at short intervals along his line of travel from Camp Apache to Camp Crittenden, near the Mexican line, during the rest of July and the whole of August. These Tanagers showed affectionate solicitude for their unfortunate brood; after an angry remonstrance against his summary proceedings, during which they flew close to him amongst the lower branches, they led the survivors tenderly away to a place of safety. Some old nests which Mr. Henshaw found at Rock Cañon closely resembled those of the Scarlet Tanager in their situation and structure, being composed mainly of coarse rootlets and dried plant-stems, with lining of similar but finer materials; and the rather slight unsubstantial fabrics were placed at the end of low horizontal branches of oaks. During the latter part of August, the birds seemed to leave the pine woods and to become more generally dispersed, some among the deciduous trees along the streams, but the majority amidst groves of oaks. They all appeared to have left for the South by the end of September; but Mr. Henshaw had improved the occasion by securing some twenty specimens.

The known range of the Hepatic Tanager in the United

States is thus limited to a small portion of our Western territory, in the Colorado Basin, and near the Mexican boundary line. In the opposite direction, the record I have compiled shows that the bird has been found as far south as Guatemala, and in various Mexican localities, as Orizaba, Xalapa, Oaxaca, and elsewhere.

In the Boston Society's "Proceedings" for May 21, 1873, p. 108, Dr. Brewer describes two eggs from Captain Bendire's collection, attributed to *Pyranga hepatica*. These are noted as being of "an oblong oval shape, rounded and nearly equal at either end", one measuring 1.02 by 0.67, the other 0.95 by 0.70; the ground-color pale light green; in one case sparingly marked all over with distinct and conspicuous blotches of purplish-brown, in the other instance covered with finer dottings of the same color, so numerous as to obscure the green. So runs the ostensible record; but in the Appendix to the "History of North American Birds" (iii. 1874, 508), the resemblance of these eggs, as well as of the nest, to those of *P. æstiva* is noted; and, as no skins of the parent were preserved, it is not improbable that the specimens may have really appertained to *P. cooperi*, and have been wrongly identified as those of *P. hepatica*.

Crimson-headed Tanager

Pyranga ludoviciana

Tanagra ludoviciana, *Wils.* AO. iii. 1811, 27, pl. 20, f. 1.—*Bp.* Journ. Phila. Acad. iv. 1824, 54 (critical).—*Bp.* Ann. Lyc. N. Y. ii. 1826, 105 (subg. *Pyranga*).—*Nutt.* Man. i. 1832, 471.—*Ornith. Comm.* Journ. Phila. Acad. vii 1837, 193 (Columbia River).—*Aud.* OB. iv. 1838, 385; v. 1839, 90; pl. 354, figs. 1, 2, 400, f. 4.—*Towns.* Journ. Phila. Acad. viii. 1839, 154.

Pyranga ludoviciana, *Rich.* Rep. Brit. Assoc. Adv. Sci. for 1836, 1837, 175.—*Bp.* PZS. 1837, 116 (Guatemala).—*Bp.* CGL. 1838, 35.—*Aud.* Syn. 1839, 137.—*Aud.* BA. iii. 1841, 231, pl. 210.—*Bp.* CA. i. 1850, 241.—*Scl.* PZS. 1856, 124 (synonymy, &c.); 1857, 213 (Orizaba); 1859, 377 (Oaxaca).—*Bd.* BNA. 1858, 303.—*Xant.* Pr. Phila. Acad. 1859, 191.—*S. & S.* Ibis, i. 1859, 15 (Guatemala).—*Heerm.* PRRR. x. 1859, 52.—*Coop. & Suckl.* NHWT. 1860, 182.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 161.—*Scl.* PZS. 1862, 19 (Parada).—*Coues*, Pr. Phila. Acad. xviii. 1866, 71 (Fort Whipple); 1868, 83.—*Brown*, Ibis, 2d ser. iv. 1868, 420 (Vancover).—*Coop.* Am. Nat. iii. 1869, 33.—*Sumich.* Mem. Bost. Soc. i. 1869, 550 (Vera Cruz).—*Coop.* B. Cal. i. 1870, 145, fig.—*Allen*, Bull. MCZ. iii. 1872, 175.—*Coues*, Key, 1872, 112.—*Aiken*, Pr. Bost. Soc. xv. 1872, 198.—*Merr.* U. S. Geol. Surv. Terr. for 1872, 1873, 678, 712, 714.—*Coop.* Am. Nat. viii. 1874, 17.—*Comstock*, Am. Nat. viii. 1874, 76.—*Coues*, BNW. 1874, 83, 232.—*B. B. & R.* NAB. ii. 1874, 437, pl. 20, f. 3, 4.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 13.—*Hensh.* Rep. Orn. Specs. 1874, 43, 60, 78, 107.—*Nels.* Pr. Bost. Soc. xvii. 1875, 357 (California).—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. 1876, 235.

Piranga ludoviciana, *Gray*, Handlist, ii. 1870, 60, n. 6839.

Phœnicosoma ludovicianum, *Gieb.* Nomencl. Av. iii. 1876, 110.

Pyranga erythropis, *Vieill.* N. D. d'H. N. 2d ed. xxviii. 1819, 291.—*V.* Ency. Méth. ii. 1823, 799.

Tanagra columbiana, *Jard.* "ed. Wils. i. 317" (*fide* Scl.).
Tanagra columbianus, *Brewer's* ed. Wils. 12mo. Boston, 1840, p. 207, fig. 93.
Louisiana Tanager, *Auct.*
Pyranga à face rouge, *V.* l. c. 1823.

HAB.—Upper Missouri region and eastern foot-hills of the Rocky Mountains to the Pacific. South through Mexico to Guatemala. Scarcely observed north of the United States (Vancouver, *Brown*). Breeds in its United States range. Winters extralimital.

CH. SP.— ♂ *Flava; dorso medio, caudâ alisque nigris, alis flavo bifasciatis; capite rubro.* ♀ *Olivacea, infrà flava lateraliter obscurior, caudâ alisque fuscis olivaceo-limbatis, alis albo-notatis.*

♂, adult: Middle of the back, wings, and tail black, the wings crossed by two yellow or yellowish-white bars on the ends of the greater and middle coverts, and the inner secondaries marked with white or yellowish. Head all around scarlet or even crimson, the color extending diluted on the breast. Other parts bright yellow, generally purest on the rump. Iris brown; bill horn-color; legs livid bluish. Length about 7 inches; wing, 3½–4; tail, 2¾–3¼; bill, ⅜; tarsus, ⅝.

♀, adult: Above olive, darker and somewhat ashy-shaded on the middle of the back, clearer and brighter on the rump and crown. Below greenish-yellow, shaded with olive on the sides. Wings and tail fuscous, with edgings of the color of the upper parts, the greater and median coverts tipped with white or yellowish, and the inner secondaries edged with the same. Averaging rather less than the ♂. The bird lacks the buffy shades characteristic of the ♀ of the *P. æstiva* group, besides being decidedly smaller. The general coloration, in its clear olive and yellow, is exactly that of *P. rubra* ♀, from which it is distinguished by the conspicuous white or yellow markings on the wings, no trace of which occurs in *P. rubra*, though the latter not seldom has *red* bars across the ends of the coverts.

The ♂ at first resembles the ♀, and in the progress toward maturity every possible gradation between the two is presented. The distinctive dark dorsal area, and traces at least of the red of the head, soon appear. In a usual condition of incomplete dress, the black of the back is mixed with gray or olive, the yellow of the back of the neck is obscured, that of the under parts is shaded with olive, and the head is only partly red. The adult ♀ differs less; but some dull summer specimens are found with the back quite gray, and the pale yellowish of the under parts overlaid with gray. It does not appear that the ♀ ever acquires a trace of red on the head.

LONG before Nuttall and Townsend's journey to the Columbia had contributed so many new species of birds to the respective publications of these authors and of Audubon, the still more venturesome and memorable travels of Lewis and Clarke had resulted in enriching Wilson's Ornithology with three remarkable novelties—Clarke's Crow, Lewis's Woodpecker, and the Louisiana Tanager. These birds, Wilson says, "were discovered in the remote regions of Louisiana"; that is,

"the extensive plains or prairies of the Missouri, between the Osage and the Mandan nations", and were given a "distinguished place" in his work, "both as being, until now, altogether unknown to naturalists, and as natives of what *is*, or at least *will be*, and that at no distant period, part of the western territory of the United States". Wilson seems to have handled three specimens of the Tanager, one of which has gone on record as "Peale's Museum, No. 6236". With the mutations of politics, and the shifting of political boundaries, the name of the Louisiana Tanager, like that of some other animals called *ludoviciana*, has become inappropriate; but in maps of the period, the letters "L o u i s i a n a" stretched clear across the present northern boundary of the United States into British America.

Wilson had no information to the point, respecting the habits of this Tanager, nor does the locality in which Lewis and Clarke discovered it appear to be known with precision. It was probably farther west than Wilson indicated; for the bird is not known to extend eastward beyond the extreme foot-hills of the Rocky Mountains, being a woodland inhabitant to which the prairie stretches offer a barrier not likely to be surpassed. While connected with Lieutenant (now General) G. K. Warren's Exploration, Dr. F. V. Hayden took the bird in the Black Hills of Dakota and at Laramie Peak; these points representing its easternmost extension, for all that we know to the contrary. Westward it stretches to the Pacific, at least in all suitable localities; but its attachment to mountainous tracts is witnessed in its apparent absence from large areas within the general limits of its distribution. It has not been ascertained to penetrate much, if any, beyond the northern borders of the United States; but in the other direction it extends through Mexico, in suitable tracts of country, and into Central America, where Mr. Salvin has found it at elevations of some five thousand feet.

It is migratory, like all the other Tanagers of this country, and withdraws altogether from our territory in the autumn, probably during the latter part of September and early in the following month, to reënter the United States in the month of April. Its summer home or breeding range is coextensive with the whole of our country, as far as latitude alone is concerned, and its winter resorts include a considerable portion of Mexico, as well as of regions farther south. I do not know whether or not any of the birds nestle in Mexico, but presume that some

may do so, in higher or northerly portions at least. The general tide of the spring migration, however, brings the species over our border, and distributes the individuals composing it from the mountainous portions of New Mexico and Arizona to latitude 49° north at least, if not a little farther in slightly elevated districts near the Pacific coast.

We had no news of this Tanager for a long while after Wilson figured and described it from the "frail remains" that Lewis and Clarke furnished him. In editing Wilson's work, Sir William Jardine found it "impossible to decide the generic station of this bird"; and thought it probable that British collections possessed no example of the rare species. In fact, the first additional specimens known to naturalists appear to have been those brought in by Nuttall and Townsend; while the accounts which these naturalists gave are nearly the whole basis of Audubon's article upon the subject. In later times, Drs. Cooper and Suckley came to be our principal authorities on the habits and distribution of the species; their observations were published in full in the twelfth volume of the Pacific Railroad Reports, or the "Natural History of Washington Territory", and the first-named of these authors also gave a supplementary notice in the "Ornithology of California". I extracted the gist of these accounts for the "Birds of the Northwest", having very little information of my own to offer, and would refer to that publication for the details in question.

The records just mentioned, to which that left by the late Mr. J. K. Lord, from observations in the extreme Northwest, may be added, represent nearly all the written history of the beautiful bird—one conspicuous even among this brilliant family for the striking color-contrasts which the rich yellow, intense crimson, and jet-black afford—down to a most recent period. Within the past few years, Mr. Allen, Mr. Ridgway, Mr. Henshaw, and Mr. Trippe are among those who have contributed to the full exposition of the economy of the species. The memoranda of both the first and last-named of these gentlemen already enrich the pages of the "Birds of the Northwest", through the personal attentions of these valued correspondents of mine.

In Southern Colorado, Mr. Henshaw found the Louisiana Tanager in small numbers among cottonwoods along the streams, at an elevation of about 7,500 feet, and much more abundantly among the pines, up to 9,000 and even 10,000 feet above sea-level. He afterward observed that it was common in

Southern Arizona, and found it lingering along the Gila River even so late as the middle of October, at which time nearly all these birds had migrated southward. As others had done, he noted the close similarity that obtains between this and the Scarlet Tanager:—"It is busy the whole time gleaning from among the pines and spruces the larger beetles and insects which infest them, and generally keeps well up among the higher branches, whence it makes its presence known by occasional bursts of melody."

Mr. Ridgway's interesting observations, made during his connection with the important survey of the 40th parallel, conducted by Clarence King, esq., were communicated to Dr. Brewer. The sweet song of the Western Tanager, which sounded quite like that of the Scarlet Tanager, attracted his attention whilst he was amidst the pines of the Sierras Nevadas, and he constantly met with the bird in wooded districts, whether among the willows and cottonwoods of the river valleys, or the cedars and piñones of mountain ranges. It was abundant in May among the thickets of *Salix* and "buffalo-berries" of the Truckee Valley, near Pyramid Lake, where it feeds upon the buds of the "grease-wood" (a species of *Obione*, perhaps *O. canescens*), with the Black-headed Grosbeak and Bullock's Oriole. Later in the summer, the peculiar querulous notes of young birds were heard in the coniferous woods of the East Humboldt Mountains; and in September the birds were noticed in the thickets along the tributaries of the Humboldt River, where they were feeding upon the pulpy fruit of a kind of haw (*Cratægus*), which grows plentifully in that region, in company with *Picus gairdneri*, *Colaptes mexicanus*, Cedarbirds, both kinds of Crossbills, and various other species. The close correspondence in habits and manners which exists between this Tanager and *P. rubra* was noted, as was also the similarity of the songs of the two species; but, regarding the call-notes of *P. ludoviciana*, Mr. Ridgway observes that "its usual note of *plit-it* is quite different from the *chip-a-ra'-ree* of the *P. rubra*".

The same ornithologist found a nest and eggs of the Louisiana Tanager in Parley's Park, Utah, on the 9th of June, 1869. This nest, says Dr. Brewer, "was on the extreme end of a horizontal branch of a pine, in a grove, flat, and with only a slight depression having a diameter of four and a half inches, with a height of only an inch. It was composed externally of only a few twigs and dry wiry stems, and lined almost entirely with

fine vegetable rootlets". Such description of the nidification shows that the nesting is quite the same as that of the Scarlet Tanager. A set of eggs collected by Mr. Ridgway, and examined by me in the National Museum, differs noticeably from those of other Tanagers of this genus, the ground-color being much clearer green, and more sparingly marked by mere dots of very dark purplish-brown. A few points appear over the whole surface, but the tendency of the markings is to aggregate at the larger end, where the spots nevertheless remain perfectly distinct, though so numerous. In size and shape, these eggs are not very different from those of *P. rubra*, though appearing rather more rounded if not actually larger. Dr. Brewer's measurements give a length of 0.95, with a greatest breadth of 0.66; eggs of *P. rubra*, he states, range from 0.90 to 1.00 in length, with an average diameter of 0.65. The number of eggs laid by the Louisiana Tanager is said by the same author to be usually three; but as the number of instances from which this average is deduced is not stated, we are free to infer that the clutch may ordinarily consist of four or five eggs, as is the case with the Scarlet Tanager.

Thus it seems to be established that the habits and manners of the Louisiana Tanager differ in no wise from those of the Scarlet Tanager, and that its singing and nesting are much the same, though there may be some peculiarity of its call-note, and though the eggs, to judge from the few that have fallen under the notice of naturalists, are recognizably different. It is scarcely necessary, therefore, to add my own experiences with this bird: these would only confirm the conclusions drawn from what has gone before. But in closing another chapter of the "Birds of the Colorado Basin"—a work that has haunted and besought me for a decade of years, since the destruction of my old Arizona manuscripts, as a spirit that would not be laid, and is now become embodied—I am happy to recall, with something of its early freshness, the picture of this brilliant bird, set in the sad-hued foliage of the pine trees, just as a sunny spot breaks here and there amongst the closely-crowded memories of a sombre past.

CHAPTER XIV.—SWALLOWS.

Fam. HIRUNDINIDÆ

Chars.—*Swallows are fissirostral Oscine Passeres with nine primaries.*—Bill short, broad, flat, somewhat triangular, deeply cleft, the gape wide and about twice as long as the culmen, the mouth thus opening to about beneath the eyes. This is the strongest character of the family in comparison with its Oscine allies, and one perfectly distinctive, though some genera of Hirundines, especially *Progne*, approch the *Ampelidæ* in the form of the bill. The bill narrows rapidly to the compressed acute tip. Nasal fossæ short and wide; nostrils directed laterally or upward, sometimes circular and completely exposed, sometimes scaled over. Culmen convex, scarcely a third as long as the head; tip of upper mandible overhanging, usually nicked. Rictus smooth (or with a few inconspicuous bristles?). Wings extremely long and strong, the pinion bearing only nine primaries, the first of which equals or exceeds the second in length, the rest being so rapidly graduated that the ninth is scarcely or not half as long as the first; secondaries and their coverts also very short; all these quill-feathers broad and stout. An acute, thin-bladed, and somewhat falcate wing, of surpassing volatorial power, results from these modifications. Tail of 12 rectrices, perhaps abnormally only 10, usually forked, or at least emarginate, and often deeply forficate, the outermost feathers being in this latter case narrowly linear in shape for a considerable distance. Feet short, small, and weak, ill-adapted to secure foothold, and very badly formed for walking —Swallows scarcely use their feet for locomotion, relying mainly upon their prowess of pinion. The tarsal envelope thoroughly Oscine in structure, being scutellate in front and laminate behind; it is sometimes partially, or almost entirely feathered; the tarsi are commonly shorter than the lateral

toes. The digits possess the normal number of phalanges; the basal phalanx of the middle digit is commonly coherent with one or both lateral toes; the hallux is ordinary, and not reversible. The digits are commonly naked and scutellate, rarely feathered to the claws. The claws are comparatively strong, compressed, well-curved, and acute, apt for clinging. The plumage is soft, smooth, and blended, most frequently glossy or even iridescent, but sometimes lustreless. Head short, broad, and depressed; neck short. Mouth capacious, its greatest width equalling that of the head. The tongue is short and not extensible. The pharynx and œsophagus are large, the latter having no crop. The syrinx or lower larynx is perfectly Oscine, and said to possess four pairs of muscles. The voice is sharp and rather thin, though melodious and susceptible of rapid and various modulation. The stomach is elliptical or roundish, moderately muscular, and lined with thick rugose epithelium; the cœca are very small.

Such characters distinguish the *Hirundinidæ* as a perfectly natural family of Oscines, which may, indeed, be recognized on sight by the combination of fissured bill, lengthened wings, and weakened feet. The group scarcely inosculates with any other, so perfectly is the Swallow type circumscribed. Its relationships appear to be, on the one hand, with the Old World *Muscicapidæ*, and on the other, through *Progne*, with the *Ampelidæ*. Within the family, the extremes of modification are seen in the genus *Hirundo*, of which the Barn Swallow is typical, and in *Progne*, which includes the Purple Martin and its allies. The minor characters have been made by some ornithologists the basis for separating the species into twenty or thirty different genera, while other writers retain them all under the single genus *Hirundo*. Between these extremes there seems to be a more judicious middle course, following which the hundred or more Swallows which have been described may be thrown into a few generic or subgeneric groups, founded on certain ulterior modifications of structure.

As pertinent to this portion of the subject, I here introduce Sundevall's method of arranging the Swallows, which will give a good idea of the leading modifications of structure throughout the family. The schedule is abridged from the famous *Methodi Naturalis Avium Disponendarum Tentamen* (8vo, Holmiæ, 1872, pp. 51–53).

Cohors 6. CHELIDONOMORPHÆ.

Fam. HIRUNDININÆ.

Genus *Hirundo* L.

1. *Hirundines genuinæ*, or *furcicaudæ*, with the tail deeply forficate, and its lateral feathers linear, the bill at a minimum, the nostrils valvate, placed low down, and opening laterally; the dorsal feathers white below the surface. (This group comprehends the true "Barn Swallows" and their immediate allies, and is subdivided according to pattern of coloration.)
2. *Hirundines variiformes*. Bill and dorsal plumage as before. Nostrils low down, opening laterally; tail either forked (but without narrowly elongate lateral feathers), or else nearly even.
   - * *Valvinares;* the nostrils partly closed with a soft scale.
     - † Highly-colored species with the belly white, and the lateral tail-feathers acute.
       - *a*) *b*) Tarsi naked. *Tachycineta* Cab.
       - *c*) Tarsi feathered. *Chelidon* Boie.
     - †† Opaque grayish species.
       - *a*) Tail emarginate, unspotted [; a tuft of feathers at base of tarsus]. *Cotyle* Boie.
       - *b*) Rectrices obtuse, spotted. *Ptyonoprogne* Reich.
       - *c*) Tail rounded, unspotted (*H. cincta* Scop.).
     - ††† Black-bellied species, with unspotted, scarcely forked tail. *Hypurolepsis* Gould.
   - ** *Apertinares;* the nostrils rounded, with an imperfect scale, or none.
     - † Species black above; tail deeply forked, with acute feathers.
       - *a*) Dark above and below, the first primary serrate. *Psalidoprocne* Cab.
       - *b*) Glossy blue-black above and below. *Atticora* Boie.
       - *c*) Black above, white below. *Pygochelidon* Bd.
     - †† Species dark colored; tail little forked, with acute feathers.
       - *d*) Uniform dark gray, the first primary serrate. *Stelgidopteryx* Bd.
       - *e*) With variegated dark colors, the rump rufous. *Petrochelidon* Cab.
       - *f*) Grayish above and below, streaked, the rump concolor. *Phedina* Bp.
3. *Hirundines fortirostres*, with the bill comparatively stout and high, rather compressed from the middle, the whole gape curved; nostrils rounded, not valvular, placed high, opening upward.
   - *a*) Blue-black species with moderately forked tail. *Progne* Boie.
   - *b*) Gray species, with little forked tail. *Phœoprogne* Bd.

The American forms of *Hirundinidæ* have been closely studied by Baird, who, in 1865 (Rev. AB. pp. 267 *seq.*), gave a careful analysis of the genera and subgenera. The following is his synopsis, somewhat abridged, expressing very clearly the minor modifications of structure, although, as he observes, the succession is not strictly natural:—

Nostrils broadly oval, or circular, opening upwards and forwards, and without overhanging membrane.

Edge of wing smooth. Tarsus short, stout, equal to middle toe without claw, feathered on inner side above.

Bill stout; culmen and commissure much curved; frontal feathers without bristles; tail deeply forked; color lustrous blue-black, sometimes with belly and crissum white ..... *Progne.*

Like the last; culmen straight to near tip; fork of tail shallow; color mouse-brown above, white beneath ..... *Phœoprogne.*

Bill weaker; culmen and commissure above straight to near tip. Frontal feathers bristly; tail nearly even; throat, rump, and crissum rufous; belly white ..... *Petrochelidon.*

Edge of wing smooth; tarsus longer than in the last, equalling middle toe and half its claw; nostrils bordered posteriorly with membrane, but not overhung internally; bill very small; tail forked.

Basal and whole of next joint of middle toe adherent to outer toe; tail very deeply forked; tarsus feathered above on inner side .. *Atticora.*

Basal and half the next joint of middle toe adherent to outer toe.

Tarsus entirely bare ..... *Notiochelidon.*

Tarsus feathered above internally ..... *Neochelidon.*

Basal joint only of middle toe to outer toe ..... *Pygochelidon.*

Edge of wing armed with stiff, recurved hooks ..... *Stelgidopteryx.*

Nostrils lateral; bordered behind and inside, or overhung, by membrane, the outer edge of which is straight, parallel with or diverging from axis of bill.

Tarsus about equal to middle toe without claw; tibio-tarsal joint feathered, the feathers extending on tarsus along inner side.

Tarsus bare below; lateral claws reaching only to base of middle claw.

Tail longer than wings, very deeply forked, with linear lateral feathers ..... *Hirundo.*

Tail shorter than wings, lightly forked ..... *Tachycineta.*

Tarsus with a tuft of feathers at lower end; lateral claws reaching beyond base of middle claw; tail lightly forked; color dull brown above, white below ..... *Cotyle.*

Tarsus equal to middle toe and half its claw, entirely bare. Tail deeply forked, about equal to the wing; color green above, white beneath ..... *Callichelidon.*

Of the groups thus established, *Phœoprogne* is ranked by Baird as a subgenus of *Progne; Notiochelidon*, *Neochelidon*, and *Pygochelidon* are considered as subgenera of *Atticora*, while *Tachycineta* and *Callichelidon* are placed under *Hirundo* proper.

In handling the North American sections in 1872, I only differed from Baird in restricting *Hirundo* to the species with deeply forked tail not shorter than the wings, which required the raising of *Tachycineta* to generic rank. This left each North American species in a genus by itself, excepting the

White-bellied and Violet-green Swallows, which I ranged together under *Tachycineta*. Though this may seem excessive subdivision, it is difficult to get along with fewer genera, if we are to accept even such as *Cotyle* and *Petrochelidon;* for the ultimate modifications of structure and details of form are as appreciable here as in the cases in which, in other families, generic groups are established. Respecting the extralimital forms, I may remark, that *Callichelidon* includes two beautiful velvety or lustrous greenish and golden species, white below, *C. cyaneiviridis* and *C. euchrysea*, allied to our *T. bicolor* and *T. thalassina;* *Atticora* and its subdivisions embrace a number of diminutive and very plainly colored species, somewhat resembling Swifts; while *Phœoprogne* includes some large South American Martins, like *Cotyle* in dullness of coloration, but near *Progne* in form.

The seven established North American species all occur in the Colorado Basin. They may readily be determined by the following

Analysis of North American Genera and Species

1. Tail deeply forficate, with linear lateral feathers; lustrous steel-blue above, rufous below..... *Hirundo erythrogastra.*
2. Tail simply emarginate; lustrous green; beneath white. *Tachycineta bicolor.*
3. Tail simply emarginate; opaque velvety-green; beneath white. *Tachycineta thalassina.*
4. Tail nearly even; lustrous steel-blue; rump rufous. *Petrochelidon lunifrons.*
5. Tarsus with tuft of feathers below; lustreless gray; below white. *Cotyle riparia.*
6. Outer edge of first primary serrate; lustreless brownish; paler below. *Stelgidopteryx serripennis.*
7. Bill very stout, curved; male entirely lustrous blue-black. *Progne purpurea.*

Now that the thoroughly unnatural order "Fissirostres" has been abolished by nearly universal consent, after enduring long in the teeth of frequent protests from scientific ornithologists, it is unnecessary to more than allude to the preposterous notions of classification which caused these strictly Oscine *Passeres* to be classed with the Swifts and Goatsuckers (*Cypselidæ* and *Caprimulgidæ*). What little resemblance may be traced between the strictly Passerine *Hirundinidæ* and the Picarian families just named, results from purely adaptive modification, the respective types of structure being radically diverse.

Names of Swallows

There are two common English names of birds of this family, "Swallow" and "Martin" or "Marten", the derivation of neither of which is obvious. The latter of these, "Martin", is undoubtedly the same as the name of certain quadrupeds of the family *Mustelidæ*, which runs through many languages in various forms, and which has occasioned much discussion. A criticism of this subject will be found in my "Fur-bearing Animals", pp. 23, 24, translated from von Martens. *Swallow* appears, with no more than the usual variation as to either consonants or vowels, in many North European languages, as the Anglo-Saxon *swalewe*, *swealwe*, *swalwe*, the Danish *svale*, Swedish *svala*, Dutch *zwaluw*, modern German *schwalbe*—some earlier forms of the latter being identical with the Anglo-Saxon. We may seek to establish a connection between *swalewe* and the Anglo-Saxon verb *swœlan*, which signifies to ascend, to fly upward, the flight of Swallows being a notorious characteristic of these birds. There is another relation which may be suggested, and which seems plausible at least, between *swalewe* and the Anglo-Saxon verb *swelgan*, to swallow (take into the throat); this, if substantiable, would show that there is really a connection between *swallow*, the name of the bird, and the verb *to swallow*—words now literally identical in English, though seemingly without the slightest connection.*

Such relation of the words will appear less strained, and in fact strengthened, if not confirmed, on examination of the entirely different set of words which mean Swallow in the South European languages: Greek, *χελιδών*; Latin, *hirundo*; Italian, *rondin*; Spanish, *golondrina*; Portuguese, *andorinha*; French, *hirondelle*. It is admitted by the highest authorities, as for example Curtius, that the Latin *hirundo* is the same as the Greek *χελιδών*, an earlier Greek form *χέρενδον* being supposed to render more evident the relation between *hir-undo* and *χελ-ιδών*. In carrying out the etymology of these two words, Corssen refers them to the Sanscrit root *har*, *ghar*, *to take*, whence comes the Greek *χείρ*, *the hand*, considered as a thing that takes, and the archaic Latin *hir*, *hand*. On this supposition, *χελιδών*, *hirundo*, *hirondelle*, and the other similar names of the Swallow, signify a bird that *takes* insects; and the act of seizing is with them followed by deglutition. It is plausible, then, that the two sets of names by which these

* Bensen, Vocab. Ang. Sax. Oxoniæ, 1701.

birds are known in so many different languages, are both rooted in the idea of capturing insects, as these birds do on the wing.*

Most of the late technical names of genera of Swallows, like *Tachycineta*, *Petrochelidon*, and *Stelgidopteryx*, are of course compounds derived from the Greek, invented by writers. *Tachycineta*, for instance, is simply *ταχύκινητος*, *a swift runner*; *Petrochelidon* is *rock-swallow* (*πέτρα*, *a rock*); and *Stelgidopteryx* means *rough-wing* (*στελγίς*, *a scraper*; *πτέρυξ*, *wing*). The Greek generic name for the Swallows, first revived in technical nomenclature by Boie (1826? Isis, 1828, 316), for the European House Martin, was *Chelidon* (*χελιδών*), of probably the same etymology with, and having precisely the same signification as, the Latin *Hirundo*, which latter was established as a genus by Linnæus in 1766 or earlier. *Χελιδών* was used by Aristotle for the Swallows *in general*, with special reference to the two mud-builders, *Hirundo rustica* and *Chelidon urbica*, the best-known European species. Aristotle also knew the Bank Swallow, but confounded it with certain Swifts, *Cypselidæ*. The Greek *κοτύλη*, or Latin *cotula* or *cotyla*, signified a cavity, such as the hollow of the hand or a vessel or measure; it is an old anatomical term for the socket of the thigh-bone, as is the Latin *acetabulum* (*a vinegar-cruet*), but was probably not used for birds until 1822, when Boie established his genus *Cotile* (Isis, 1822, 550), afterward more correctly written *Cotyle* (Isis, 1844, 170). The obvious application here is to the holes in the ground in which these birds nest. *Procne* or *Progne*, Boie's genus established for our Purple Martins, is a classical proper name, also used by Ovid and Virgil for some kind of Swallow, and, like *Chelidon*, *Herse*, and *Cecrops*, is found in some of the myths of the ancients. Boie's genus *Cecropis* is obviously the same as Cecrops or *Κέκροψ*, who was the founder and most ancient king of Attica. After the probably imaginary personage known as Ogyges, Cecrops was the autochthon to whom the Attics traced their origin, though popularly represented as half man, half serpent. Herse was one of his daughters, beloved by Mercury, and mother of Cephalus. Chelidonia was a festival at Rhodes, in which persons went begging, and singing a song called Chelidonisma,† which began with an allusion

* Littré, Dict. Franç. Paris, 1863.

† According to other authority, the beggars went about having swallows perched upon their fingers. Chelidonias (*χελιδονίας*) was the west wind of early spring, which brought Swallows.

to swallows, and the approach of spring: *Ἦλθ', ἦλθε χελιδὼν καλὰς ὥρας ἄγουσα, καὶ καλοὺς ἐνιαυτούς.* "*Venit, venit hirundo pulcras ducens horas et annos pulcros.*"

The story of Procne is very differently told by writers. Procne was sister of Philomela, daughter of Pandion, king of Athens, and wife of Tereus, king of Thrace. Procne became by Tereus mother of a son, Itys. After living some time in Thrace, she wished to see her sister, and induced Tereus to go to Athens and prevail upon Pandion to allow him to bring Philomela. On the way, Tereus violated Philomela, cut out her tongue that she might not betray him, and then came to Procne with the story that her sister had died on the way. But Philomela contrived to communicate to Procne the story of the outrage; and Procne thereupon killed her son Itys, and served up his flesh to his father. Then the two sisters fled, pursued by Tereus with an axe, and finding themselves about to be overtaken, they prayed to the gods to change them into birds. Philomela thereupon became a nightingale (*ἀηδών*), and Procne a swallow (*χελιδών*). Tereus himself was turned into a hoopoe (*ἔποψ*). Authorities reverse the respective situations of the sisters, before and after their transformation; but this account accords best with the signification of the words. "The legend we have been giving is one of those invented to account mythically for the habits and properties of animals. The twitter of the swallow sounds like *itys, itys;* the note of the nightingale was regarded as lugubrious, and the hoopoo chases these birds."*

General Distribution of Swallows

Swallows are thoroughly cosmopolitan. Their range northward carries them beyond the arctic circle, both in America and in Europe, and they straggle toward the pole as far as any birds are known to go. The Bank Swallow has been observed in the Parry Islands, while the common European Barn Swallow has been seen both in Spitzbergen and Nova Zembla. *Cotyle riparia* and *Chelidon urbica* both breed in numbers in Lapland, up to latitude 70° N. Many of the species, likewise, have an enormous range; thus, *Hirundo rustica* inhabits Europe, Asia, and Africa, from Lapland to the Cape of Good Hope and the Moluccas.

* This is simply the outline of the myth, abridged from Anthon, Class. Dict. 1041. [New York, 1876.] The classic story is told at great length and with profuse embellishment by some, *e. g.* Gesner, *De Avibus*, 1617, pp. 503–505.

The species of the Old and New World, with probably the single exception of *Cotyle riparia*, are distinct from each other. Species of the genus *Hirundo* and its immediate allies have the range of the entire family, and *Cotyle* is also of very extensive distribution, inhabiting all the great continental areas, unless Australia is to be excepted, as well as the Antilles. *Progne* and *Stelgidopteryx* are confined to America; *Petrochelidon* and *Atticora* are also characteristic of the Western Hemisphere, though both are said to occur in the Old World; *Chelidon* is exclusively Old World; *Psalidoprogne* is confined to Africa; and the single species of *Phedina* inhabits Madagascar and the Mascarene Islands.*

Migration of Swallows

Being insectivorous birds that take their prey on the wing, Swallows necessarily migrate through the cold and temperate zones of the northern hemisphere. Their recession from the north is urged as well by the delicacy of their organization and their susceptibility to cold as by the periodical failure of the sources of their food-supply. The prowess of their pinion is equal to the emergency of the longest journeys—no birds whatsoever fly better or farther than some of the Swallows do; and their movements are pre-eminent in the qualities of ease, of speed, and of regularity. These facts are matters of common knowledge; the comings of Swallows have passed into proverb, and their leave-takings been rehearsed in folk-lore among the signs of the waning times. Swallows have long been held for weather-prophets; and with reason enough in the quick response of their organization to the influence of atmospheric changes. Swallows have figured in augury; their appearance has been noted among auspicia; and truly their flight is barometric, for they soar on clear warm days, and skim the surface of the ground in heavy falling weather, perhaps neither always nor entirely in the wake of winged insects on which they prey. These mercurial birds are also thermomètric; they are gauges of temperature, if less precise than the column of the fluid metal itself. It takes but a few warm days, even in our midwinters, to send Swallows trooping northward from the orange and the cypress of the South; and the uncertain days, when capricious young spring pours delicious balm on the wounds of winter, are sure to lure some Swallows

* Wallace, Geogr. Dist. Anim. ii. 281.

on beyond their usual bounds, like skirmishers thrown out before the oncome of the host of occupation.

There is concert, too, in the campaigns of the Swallows; they act as if by consultation, and carry out agreement under leadership. One may witness, in the autumn more particularly, before the Swallows leave us, that they gather in noisy thousand, still uncertain of their future movements, eager for the council to determine their line of march. Great throngs fly aimlessly about, with incessant twittering, or string along the lines of telegraph, the eaves of houses, or the combs of cliffs. In all their talk and argument, their restlessness and great concern, we see how weighty is the subject that occupies their minds; we may fancy all the levity and impulse of the younger heads, their lack of sober judgment, the incessant flippancy with which they urge their novel schemes, and we may well believe their departure is delayed by wiser tongues of those taught by experience to make haste slowly. Days pass, sometimes, in animated debate, till delay becomes dangerous. The gathering dissolves, the sinews are strung, no breath is wasted now —the coming storm may work its will now, the Swallows have escaped its wrath, and are gone to a winter's revelry in the land where winter's hand is weakened till its touch is scarcely felt.

All this, and more that might be written, is no news. Reckless of space, these animated time-slaying wings, these mercurial embodiments of buoyancy, have long been favored objects of the ornithologist's speculation. Conspicuous, notorious, familiar as they are among all feather-bearers, in the extension of their flights, in the multitudes of individuals that twice a year fly past our very face and eyes in going to and from the winter quarters we have learned as well as we have their summer sojourn in our midst—with all these attributes, I say, Swallows are prodigies, phenomenal and problematical still. Their flights have been closely watched and studied, furnishing large basis for our general inductions respecting the whole subject of the migrations of birds. Swallows are taken as the typical migrants, whose dates of arrival and departure are fixed points in the ornithologist's calendar, and known factors in the great equation of birds' movements. In short, no birds are better known in all that pertains to their regular and normal migrations.

Thus, the competent observer in each locality in the United

States knows exactly when to expect the Swallows, and can predicate their arrival within a few days—the probable error being due to advance or retardation of the season. This local observer knows as well how long the birds will stay. Then, those of us who make a business of the matter, and supplement our individual observations with the recorded experiences of all the rest, in all other countries, trace the movements of the birds into warmer parts of America; we map the distribution of each species, and account for every day in the lives of Swallows during the period of their absence from our midst. We know just where they go and what they do. We know, for instance, that countless thousands of White-bellied Swallows disport all winter long in Florida, as bright and active then and there as during their summer sojourn in New England. We know that myriads of Swallows are then at play in the air in Mexico, in the West Indies, and in Central America, just the same as at any other season of the year.

Yet it was gravely asserted centuries ago, and it has been steadily reiterated at intervals ever since, that Swallows plunge into the mud, become torpid, and hibernate like frogs. Learned bodies like the French Academy in Paris and the Royal Society of London have discussed this matter, printed the evidence in their official publications, and looked as wise after as before their meditations on the subject. Ornithologists in general fight shy of the thing; it savors too much of the marvellous, the mythical and supernatural, and seems too incredible to be entertained for a moment. It is as much as a virtuous ornithologist's name is worth to whisper hibernation, torpidity, and mud. "Pooh! Nonsense! We know all about the migrations of Swallows. Don't we know exactly where they go, and how they get there, and how they get back? Haven't we accounted for every day of their absence? Besides, no Swallow could live in the mud—the thing is preposterous—can't be done, you know!"

The orthodoxy of the subject is, that Swallows never fly into the mud and lie there torpid, *because* they cannot do so. But it is always unsafe to ignore the cumulative wisdom of the past, and it is never wise to speak of the impossible outside of mathematics. The most difficult point to accept, or to attempt to explain, is the suddenness of the alleged transition from a high state of animation to a degree of lethargy, and the abruptness with which the activity of vital functions is said to

be arrested. For the rest, I see no reason why a Swallow should not stay a while in the mud in a state of suspended animation, or greatly lowered degree of vital activity. The thing is physically and physiologically feasible; it is in strict analogy with observed phenomena in the cases of many other animals; and it is not more marvelous than catalepsy, trance, and several other conditions of life, the rationale of which is still obscure. Finally, it is attested by the most positive, direct, and explicit testimony of eye-witnesses, whose veracity is unimpeached, whose competency is unchallenged, and who, being neither knaves nor dupes, have reiterated the evidence for a period of several centuries. The rebutting testimony is necessarily negative and inconclusive, for it consists, in effect, of mere denial, or statement of disbelief, on the ground that the allegations of fact are improbable or impossible. The evidence has never been successfully refuted or satisfactorily explained away; * and the witnesses, nothing bullied nor disconcerted, continue to tell what they have seen.

They say, that they have seen hundreds of Swallows, in full flight, suddenly dive under water and disappear beneath the surface. They say, that they have dug Swallows out of the mud, found them lethargic, and seen them revive and fly away. They say, they have found torpid Swallows in holes, in caves, in various odd nooks, sometimes singly, sometimes clustered like bees swarming, and have picked them up apparently dead, and have reanimated them by the warmth of the hands. They say much more to the same effect, and give full particulars.

I have never seen anything of the sort, nor have I ever known one who had seen it; consequently, I know nothing of the case but what I have read about it. But I have no means of refuting the evidence, and consequently cannot refuse to recognize its validity. Nor have I aught to urge against it, beyond the degree of incredibility that attaches to highly exceptional and improbable allegations in general, and in partic-

* In his critical commentary on Aristotle, Sundevall remarks that the northern stories of the subaqueous hibernation of Swallows find no place, but that, instead, the author speaks of their retiring to holes, probably, says Sundevall, confounding them with bats. Sundevall brings in the Dipper to account for the alleged phenomena:—„Es ist gezeigt worden dass die erstere Sage dadurch entstanden sei, dass Cinclus aquaticus zuweilen beim Zuge mit dem Eisnetze gefangen wurde" (p. 123 of the German translation, Stockholm, 1863).

ular the difficulty of understanding the alleged abruptness of the transition from activity to torpor. I cannot consider the evidence as inadmissible, and must admit that the alleged facts are as well attested, according to ordinary rules of evidence, as any in ornithology. It is useless as well as unscientific to pooh-pooh the notion. The asserted facts are nearly identical with the known cases of many reptiles and batrachians. They are strikingly like the known cases of many bats. They accord in general with the recognized conditions of hibernation in many mammals.

It is well to remember that this thing was started in very early times, before there was such a thing as a science of ornithology, and before anything was fully explained respecting the migrations of birds. Swallows were among the first birds whose movements were noted with particularity. Their abundance rendered them favorable as well as familiar objects of study in this regard; and the regularity of their movements, as well as the suddenness of their disappearance and reappearance, gave rise to the wildest speculation. This was at a time when nothing was too absurd or too preposterous to be countenanced by the best science that the times afforded. I can lay my hand, for instance, on papers of the period discussing the migration of birds to the moon—the falling of the little quadrupeds called lemmings in showers from the clouds—the origin of Brant Geese from barnacles that grew on trees—*et id genus omne.* Some people still argued that the earth was flat, still sought perpetual motion and the square of the circle. Just as soon, then, as the actual and normal migration of Swallows was determined, the alleged accounts of the torpidity and hibernation of Swallows were naturally consigned to the same limbo that held the barnacle-geese and the cloudy lemmings, and the mud-theorists were hooted out of court. But one swallow does not make a summer;* nor does the migration of a million Swallows into Africa or South America prove that some other Swallows cannot hibernate in the mud. This, however,

* This familiar saying has an application far beyond its literal and most obvious signification. "Vna hirundo non facit ver, Μία χελιδὼν ἔαρ οὐ ποιεῖ· hoc est, vnus dies non sat est ad parandam virtutem aut eruditionem: aut non vnum aliquod benefactum, benedictumve sufficit ad hoc, vt viri boni, aut boni oratoris cognomẽ promearis: plurimis enim virtutib. ea res cõstat. Aut vt certum aliquid cognoscas, non satis est vnica coniectura. Siquidem fieri potest vt vna quæpiam hirundo casu maturius appareat. Sumptum ab hirundinis natura quæ veris est nuncia." GESN., *De Avibus*, ed. 1617, p. 506.

is the gist of the whole counter argument. I repeat, that it is not scientific to deny the alleged hibernation *à priori;* and that the testimony, so far from ceasing with the irresponsible infancy of science, is reiterated to-day with the full voice of mature science, in terms that have not been successfully refuted. We may always suspend judgment, and such tentative attitude is worthy of respect; but it is not permitted us, in the present aspect of the case, to rule out the evidence.

Swallows, moreover, are not the only birds that are alleged, on equally good grounds, to swarm in close retreats, become torpid, lethargic, and so hibernate. In fact, precisely the same allegations are current in the cases of Swifts (*Cypselidæ*). These birds, so similar to Swallows in many respects, physical and physiological, are perfectly well known and admitted to nest habitually in close retreats—to nightly gather by thousands in similar places, streaming in at dusk, and streaming out at daylight—to swarm in myriads in hollow trees, and perish there in such numbers that in time their remains form solid masses of bones, feathers, excrement, and decayed soft tissues several feet in thickness at the bottom. Again: the winter retreats of some of the commonest Swifts are unknown. Our ordinary Chimney Swift (*Chætura pelagica*), unless I am greatly mistaken, is not recorded as occurring anywhere beyond the United States in winter. Nor is it a recognized inhabitant of any portion of the United States in winter, except possibly along our extreme southern border. Where does this bird go and stay in winter? I suppose that it hibernates in hollow trees, and could give reasons for the supposition.

As equally pertinent to this exceptional subject, I may allude to the popular belief that the Common Rail, Sora, or so-called Ortolan, *Porzana carolina*, sinks in the mud and hibernates with the frogs. So far as I am aware, this is a popular delusion, taking its origin in the silence and celerity of the bird's regular migrations, and the suddenness of its appearance and disappearance. It seems to be a very weak-winged bird; one day it throngs the marshes, and the next there are none to be found; the hasty assumptions of ignorant and credulous persons rest upon these premises; and some visionaries go so far as to assert, that the rails turn into frogs. As already said, in this case I do not know that there is any acceptable testimony on scientific record.

The literature of the migrations and alleged hibernations of

Swallows is extensive, and some of it is very curious. In order that the reader may avail himself of all the sources of information I possess, and form his own conclusions, I present him with such portion of the bibliography of the subject as I happen to have already compiled. Having at present writing only about half finished my "Bibliography of Ornithology", I suppose there may be extant about twice as many articles on the subject as are here given. Most of these titles relate merely to irregularities observed in the ordinary migrations of Swallows in England; but there is a fair sprinkling of references to the particular *crux* of hibernation. The most wary or the most timid student may be assured that he will find himself in perfectly respectable company whichever side of the fence he may fall on. The notes which I have appended in many cases support my assertions regarding the character of the evidence we possess, and warrant my statement that the allegations, respecting which ornithologists must sooner or later come to some understanding, are well attested. For the rest, I may add, that I will not ignore, do not deny, and can not vouch for the statements of authors.

1630. SCHWALBACH, J. G. "Dissertatio de Ciconiis, Gruibus, et Hirundinibus, eorumque Hybernaculis. Spirae, 1630. 4to. pp. 28."

Not seen—others quote the title differently.

1658. THOMASIUS, J. Dissertatio de Hibernaculis Hirundinum. Thomasius, J., præs. resp. Chr. Schmidichen. 4to. Lipsiæ, 1658; 1671; 1702, pp. 32.—Deutsche Uebers., Von der Schwalben Winterquartier. 8vo. Dresden, 1702.

Not seen—Bohm, Bibl. ii. i. p. 521. Title compiled from different sources.

1666. SCHEFFERUS, J. ["That it is most certain, that *Swallows* sink themselves towards Autumne into Lakes, no otherwise than Frogs;" etc.] < *Philos. Trans.* i. 1666, p. 350.

1702. GOEDING, A. "Diss. phil. brevem exhibens descriptionem Abitus Domiciliique hibernalis Hirundinum; Præs. And. Goeding, Resp. E. Aurelius, Dalek. Upsaliæ, 1702. 8vo. pp. 4, 52."

Not seen—title taken from v. Friesen.

1761. COLLINSON, P. A Letter to the Honourable J. Th. Klein, Secretary to the City of Dantzick, from Mr. Peter Collinson, F. R. S. concerning the Migration of Swallows. < *Philos. Trans. for* 1760, li. pt. ii. 1761, pp. 459–464.

Refuting the notion of torpid hibernation.

1764. ACHARD, F. C. Remarks on Swallows on the Rhine. < *Philos. Trans. for* 1763, liii. 1764, pp. 101, 102.

Statement of their being found in holes in a sandy cliff; they "seemed stiff and lifeless", but subsequently revived.

1764. LECHE, J. "Diss. Acad. de Commemoratione hybernali et peregrinationibus Hirundinum. Præs. Joh. Leche, Resp. Joh. Grysselius, Neric. Aboae, 1764. 4to. pp. 34."

Not seen—title from v. Friesen.

1772. BARRINGTON, D. An Essay on the periodical Appearing and Disappearing of certain Birds, at different Times of the Year. In a Letter from the Honourable Daines Barrington, Vice-Pres. R. S. to William Watson, M. D. F. R. S. < *Philos. Trans.* lxii. 1772, art. xx. pp. 265–326.

Reprinted, considerably augmented, in Barrington's Miscellanies, p. 174. Refers especially to Swallows. Quotes Harl. Misc. ii. 561, for supposed migration of birds to the moon. Quotes Shaw, Phys. Obs. Algiers, chap. 2. Quotes Martin, Edinb. 1771, 12mo, for thermometrical experiments. Adanson, Voy. Senegal, pp. 13, 15, 67. Forster's Translation of Kalm. Translation of Osbeck. Burch's Hist. of the Roy. Soc. iii. 189. Edwards, Essays, p. 197 (migration of sea fowl).

1774. WAHRMUND, C. W. "Ueber den Winteraufenthalt der Schwalben, Störche und andere Vögel. < *Neues Hambgr. Magaz.* lxxxi. 1774, p. 195."

Not seen—source of title not remembered.

1775. CORNISH, J. Of the Torpidity of Swallows and Martins. < *Philos. Trans.* lxv. pt. ii. 1775, pp. 343–352.

Affirmed and discussed.

1785. DEXTER, S. A Letter on the Retreat of House-Swallows in Winter, from the Honourable Samuel Dexter, Esq; to the Honourable James Bowdoin, Esq; Pres. A. A. < *Mem. Amer. Acad. Arts and Sci.* i. pt. ii. 1785, pp. 494–496.

Asserting the subaqueous torpid hibernation as a fact.

1789. CARLSON, G. v. "Anmärkningar om Svalor. < *Kongl. Vetensk.-Akad. Nya Handl.* 1789, x. pp. 315–317."

Not seen—title from v. Friesen, Öfv. Sver. Orn. Litt. 1860, 31.

1793. PACKARD, A. A Letter on the Retreat of Swallows in Winter. < *Mem. Amer. Acad. Arts and Sci.* ii. pt. i. 1793, pp. 93–95.

Letter to S. Dexter, confirming his statements by additional observations.

1799. COLE, P. On the Disappearance of Swallows in Autumn; in a Letter from Mr. Peter Cole to Dr. Mitchill, dated New-York, September 25, 1798. < *Tilloch's Philos. Mag.* iv. 1799, pp. 414–417.

Article taken from the American Medical Repository. Original not seen. "Some of these birds" (Cotyle riparia) "appeared to run on the surface of the water with great rapidity, and, in the twinkling of an eye, disappeared under the water and rose no more. . . . . I am now become a proselyte to the swallows remaining in a torpid state during the winter, not only from speculative researches but from ocular demonstration." Quotes also passages to the same effect from p. 735, vol. ii. of the "Christian's, Scholar's and Farmer's Magazine", and from a letter from Mr. Josiah Blakeley to Mr. Carey, dated Baltimore, Jan. 7, 1788, in "American Museum", iii. pp. 451, 452.

18—. S. Ö—N. [ÖDMANN, S.] "Om Svalors dränkning." < *Läk. o. Naturf.* ix. Bd. pp. 178, 179.

Not seen—title from v. Friesen, p. 30.

1800. POLLOCK, H. On the Submersion of Swallows in Autumn. < *Tilloch's Philos. Mag.* viii. 1800, pp. 107–109.

Testimony of eye-witness to the fact that "they plunged into the water and disappeared", to the number of about 200, within 30 yards of the observer.

1804. ANTES, F. On the Hybernation of Swallows, by the late Colonel Antes. Communicated by Dr. Barton. < *Trans. Amer. Philos. Soc.* vi. pt. i. 1804, pp. 59, 60.

1805. BARTON, B. S. Letter to M. Lacepede, of Paris, on the Natural History of North America. < *Tilloch's Philos. Mag.* xxii. 1805, pp. 204–211.

Asserts the torpid hibernation of Swallows as a fact.

Prior to 1810. REEVE, H. "An Essay on the Torpidity of Animals. By Henry Reeve, M. D."

Not seen—*cf. Philos. Mag.* xxxv. 1810, p. 241, whence the above imperfect title is extracted. Said to relate in part to migration and torpidity of various birds.

1810. BARTON, B. S. On the Torpidity of Animals. < *Tilloch's Philos. Mag.* xxxv. 1810, pp. 241–247.

Discussing the matter chiefly in the cases of Swallows and Hummingbirds. "There is no fact in ornithology better established than the fact of the occasional torpidity of" *Cotyle riparia* and *Chætura pelasgia*.

1813. FORSTER, T. "Observations on the brumal retreat of the Swallow [etc.]. 8vo. London, 1813."

Not seen.—The same or another tract by the same author is said to have reached its 6th ed. in 1817.—See also *Trans. Linn. Soc.* xii. pt. ii. p. 590.

1824. AUDUBON, J. J. Facts and Observations connected with the permanent residence of Swallows in the United States. < *Ann. Lyc. Nat. Hist. New York*, i. pt. i. 1824, pp. 166–168. (Read Aug. 11, 1824.)

H. lunifrons, Say, is here renamed *H. respublicana*, sp. n.

1824. CLINTON, DE W. On the Hirundo fulva of Vieillot, with some general remarks on the birds of this genus. < *Ann. Lyc. Nat. Hist. New York*, i. pt. i. 1824, pp. 156–166. (Read Aug. 9, 1824.)

"*H. fulva* Vieill.", *i. e. H. lunifrons*, Say; here renamed *H. opifex*, sp. n.

1827. SMITH, COLIN. Facts in regard to the Hybernation of the Chimney Swallow, (Hirundo rustica). < *Edinb. New Philos. Journ.* iii. 1827, pp. 231–234.

Five individuals captured in torpid state on rafters of an out-house. They revived and flew away. Supposition that *Cotyle riparia* might be found dormant in its holes.

1829. BREE, W. T. On the Arrival and Retreat of the British Hirundines, with a Table of Arrivals and Departures, from 1800 to 1828. < *Loudon's Mag. Nat. Hist.* ii. 1829, pp. 16–20.

1829. "L. E. O." Swallows remaining in this Country [England] during the Winter. < *Loudon's Mag. Nat. Hist.* ii. 1829, p. 458.

1839. SWEET, R. A Swallow in November [near Fulham, Engl.]. < *Loudon's Mag. Nat. Hist.* ii. 1829, p. 101.

1830. Bree, W. T. Dates of the first and last Appearances of the Hirundines in the Neighbourhood of Allesley Rectory [England], for the Year 1829, with Remarks. < *Loudon's Mag. Nat. Hist.* iii. 1830, pp. 130–132.

1830. "J. H. N." Migration and Breeding of Swallows; in answer to W. H. White (p. 194). < *Loudon's Mag. Nat. Hist.* iii. 1830, p. 474.

1831. Couch, J. Notes on the Chimney Swallow (Hirundo rustica), and on the Window Swallow, or Marten (Hirundo urbica). < *Loudon's Mag. Nat. Hist.* iv. 1831, pp. 520–523.

Migrations and habits.

1831. Loeffler, H. "Ueber den Winterschlaf der Schwalben. < *Preussisch. Provinzialbl.* v. 1831, p. 63."

Not seen—source of title forgotten.

1832. Audubon, J. J. Ueber das Verbleiben der Schwalben. < *Oken's Isis*, Bd. xxv. 1832, p. 1071.

Aus d. Ann. Lyc. Nat. Hist. New York, i. 1824, p. 166.

1832. Clinton, DeWitt. Ueber Hirundo fulva Vieill. [*i. e.* H. lunifrons Say]. < *Oken's Isis*, Bd. xxv. 1832, p. 1071.

Aus d. Ann. Lyc. Nat. Hist. New York, i. 1824, p. 156.

1832. Smith, C. Ueberwinterung der Rauchschwalbe, Hirundo rustica. < *Oken's Isis*, Bd. xxv. 1832, p. 693.

Auszug aus d. Edinb. New Philos. Journ. Bd. ii. 1827, Heft vi. p. 231.

1833. "Ll. Con." The Swallow near the Conway, Caernarvonshire. < *Loudon's Mag. Nat. Hist.* vi. 1833, p. 72.

1833. Tatem, J. G. The Departure of the Swallow. < *Loudon's Mag. Nat. Hist.* vi. 1833, p. 72.

1833. Woodruff, S. On Hybernation and other topics of Natural History. < *Sillim. Am. Journ.* xxiv. 1833, pp. 363–369.

Touches on supposed hibernation of the Swallow, in separate sub-heads, pp. 368, 369.

1834. ———. "Svalans [Hirundo] flyttning. < *Tidsk. f. Jägare o. Naturf.* iii. 1834, pp. 881–885."

Not seen—title from v. Friesen.

1838. Dutrochet, H. Hibernation des hirondelles. < *Compt. Rend. de l'Acad. Sci.* vi. 1838, p. 673.

Extrait d'une lettre. "Un fait dont j'ai été témoin: Au milieu de l'hiver deux hirondelles ont été trouvées engourdies dans un enfoncement qui existait dans une muraille et dans l'intérieur d'un bâtiment. Entre les mains de ceux qui l'avaient prises, elles ne tardèrent pas à se réchauffer et elles s'en volèrent."

1838. Dutrochet, H. [Lettre adressée à M. Is. Geoffroy St. Hilaire, relative à l'hibernation des Hirondelles.] < *Revue Zoologique*, i. 1838, p. 66.

Extrait du Compt. Rend. vi. 1838, p. 673.

1838. LARREY, *Baron*. Hibernation des Hirondelles. < *Compt. Rend. de l'Acad. Sci.* vi. 1838, p. 703.

"Il raconte dans sa Campagne d'Italie (tome I^er^), que, passant à la fin de l'hiver de 1792 dans la vallée de Maurienne, il avait découvert dans une grotte profonde d'une montagne, nommée *l'Hirondellière*, une grande quantité de ces oiseaux suspendus comme un essaim d'abeilles dans l'un des coins de la voûte de cette grotte."

1838. GEOFFROY SAINT-HILAIRE, ISIDORE. [Réflexions à l'occasion de cette communication.] < *Compt. Rend. de l'Acad. Sci.* vi. 1838, p. 703.

1839. DUTROCHET, H. Ueberwinterung der Schwalben. < *Oken's Isis*, Bd. xxxii. 1839, pp. 367, 368.

L'Institut, Nr. 229, 1838, p. 157.

1839. PELLETERIE, H. DE LA. [Sur la prétendue hibernation des Hirondelles.] < *Revue Zoologique*, ii. 1839, p. 344.

1843. ATKINSON, J. C. Note on the migration of Martins [Chelidon urbica] and Sand-martins [Cotyle riparia]. < *Zoologist*, i. 1843, pp. 354, 355.

1843. BREE, W. T. Note on the late departure [from Dover] of the Swallow [H. rustica] in 1842. < *Zoologist*, i. 1843, pp. 101, 102.

1843. JORDAN, R. C. R. Note on the late departure [from Teignmouth] of Swallows, &c. in 1842. < *Zoologist*, i. 1843, p. 76.

1843. NEWMAN, E. Note on the late departure [from Peckham] of the Swallow in 1842. < *Zoologist*, i. 1843, p. 77.

1843. NORMAN, G. Note on the late departure of the Swallow [H. rustica, from Hull] in 1841. < *Zoologist*, i. 1843, p. 102.

1843. TRATHAN, J. T. Note on the late departure [from Falmouth] of Swallows in 1842. < *Zoologist*, i. 1843, p. 76.

1843. WILCOX, W. Note on the early arrival of Martins [Chelidon urbica, at Devon] in 1843. < *Zoologist*, i. 1843. pp. 145, 146.

1844. BELL, R. J. Note on the late occurrence of the Swallow at Goole in December. < *Zoologist*, ii. 1844, p. 565.

1844. CLIFFE, H. F. Note on the Swallow's course over the Atlantic. < *Zoologist*, ii. 1844, p. 565.

1844. GURNEY, S., JR. Note on the early arrival of the Swallow or Martin. < *Zoologist*, ii. 1844, p. 565.

1844. HUSSEY, A. Enquiry as to the arrival of the Swallow, &c. < *Zoologist*, ii. 1844, p. 650.

1844. SLADEN, E. H. M. Note on the Migration of the Swallow. < *Zoologist*, ii. 1844, pp. 762, 763.

1845. HUSSEY, A. Migration of House Martins [Chelidon urbica] about Brighton. < *Zoologist*, iii. 1845, p. 870.

1845. "J. A. S." Swallows. A fact in Ornithology. < *Lit. Rec. and Journ. Linn. Assoc. of Penna. College*, i. 1845, pp. 269, 270.

Their gathering in multitudes at times.

1845. SLADEN, E. H. M. Flight of the Swallow. < *Zoologist*, iii. 1845, p. 939.

1845. WEBSTER, T. Partial Migration of [Hirundine] Birds. < *Zoologist*, iii. 1845, pp. 1191, 1192.

1846. DAWSON, J. Swallows never seen at the Carron Iron-works in Winter. < *Zoologist*, iv. 1846, pp. 1297, 1298.

Compare seventh title following.

1846. FORSTER, T. "On the Migration of the Swallows. < *Proc. Linn. Soc.* i. 1846, p 296; *Ann. Mag. Nat. Hist.* xviii. 18—, p. 195."

Not seen—title derived from Agassiz and Strickland.

1846. RICHARDSON, F. Migration of the Swallow. < *Zoologist*, iv. 1846, p. 1211.

1846. RODD, E. H. Late stay of the Swallow at Penzance. < *Zoologist*, iv. 1846, p. 1247.

1846. RODD, E. H. Early arrival of the Swallow in Cornwall. < *Zoologist*, iv. 1846, p. 1368.

1846. RUDD, T. S. Late departure of the Swallow at Redcar. < *Zoologist*, iv. 1846, p, 1368.

1846. SMITH, H. E. Late stay of the House-martin [Chelidon urbica] at Alton. < *Zoologist*, iv. 1846, p. 1247.

1846. SMITH, S. Swallows at the Carron Iron-works in winter. < *Zoologist*, iv. 1846, p. 1247.

From Sydney Smith's "Principles of Phrenology".

1847. BIRD, W. F. W. Early Arrival of the Sand-Martin [Cotyle riparia]. < *Zoologist*, v. 1847, p. 1777.

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1847. JOHNSON, J., *jr.* Swallows in January [in England]. < *Zoologist*, v. 1847, p. 1639.

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1869. Briggs, T. R. A. Late stay of Martins. < *Zoologist*, 2d ser. iv. 1869, p. 1516.

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1870. BLAKE-KNOX, H. Migration of Swallows. < *Zoologist*, 2d ser. v. 1870, p. 2182.

1870. SMEE, A. H. Note on the Migration of Swallows. < *Zoologist*, 2d ser. v. 1870, pp. 2140, 2141.

1871. BOND, F. Late-staying Hirundines [at Brighton]. < *Zoologist*, 2d ser. vi. 1871, p. 2440.

1871. GOEBEL, H. Curiosa. < *J. f. O.* xix. 1871, pp. 26, 27.

Notices statements which had been made respecting the breeding of Ostriches and the movements of Swallows.

1871. LABOUCHERE, H. M. Arrival of the Martin and Swallow [at Hampstead]. < *Zoologist*, 2d ser. vi. 1871, p. 2609.

1871. MOOR, E. C. Late Swallows [in Ipswich]. < *Zoologist*, 2d ser. vi. 1871, p. 2440.

1872. MEYER, R. Ankunft und Abzug der Schwalbenarten [in Deutschland] in diesem Jahre. < *Zool. Gart.* xiii. 1872, pp. 337–339.

1872. RODD, E. H. Arrival of Swallows [at Land's End]. < *Zoologist*, 2d ser. vii. 1872, p. 3064.

1872. WAYNE, W. H. Swallow and Martin, or Chimney Swallow and Eave Swallow. < *Zoologist*, 2d ser. vii. 1872, p. 3234.

Note on their vernacular names and on their appearances, &c.

1873. THOMASSON, J. P. Late Swallows [Oct. 29; Lancashire]. < *Zoologist*, 2d ser. viii. 1873, p. 3369.

1874. CLOGG, S. Early Congregation of Martins. < *Zoologist*, 2d ser. ix. 1874, p. 4157.

1874. BELL, T. Scarcity and Late Stay of Martins and Swallows at Selborne. < *Zoologist*, 2d ser. ix. 1874, pp. 3833, 3834.

1874. CAMBRIDGE, O. P. Late Stay of House Martins [Nov. 22d, in Great Britain]. < *Zoologist*, 2d ser. ix. 1874, p. 3833.

1874. CLOGG, S. Martins and Swallows; is their Late Stay dependent on the Wind? < *Zoologist*, 2d ser. ix. 1874, p. 3834.

1874. CREWE, H. H. House Martin near Aylesbury on the 5th of December. < *Zoologist*, 2d ser. ix. 1874, p. 3833.

1874. CROSFIELD, A. J. Late Martins and Swallows [Nov. 2, Reigate]. < *Zoologist*, 2d ser. ix. 1874, p. 3881.

1877. ANON. Palmén on the Migration of Birds < *Nature*, xv. no. 387, Mar. 29, 1877, pp. 465–467.

Review of Ueber die Zugstrassen der Vögel von J. A. Palmén, Leipzig, 1876.—Handles without gloves those "who still hanker after the ancient faith in 'hibernation.' It may be said that it is but lost labour to attempt to bring such people to reason, and so, possibly, it is. Still, the apparent gravity with which this absurd notion is from time to time propounded, renders it necessary that its folly should be as often exposed, ..."

1877. ARGYLL, *Duke of*. Hibernation of Birds < *Nature*, xv. no. 390, Apr. 19, 1877, pp. 527, 528.

Transmits letter from Sir John McNeill, who says:—"I have stated and I now repeat that I have seen swallows in large numbers hibernating." Then he gives the particulars.

1877. MCLEOD, R. R. Correspondence. < *Field and Forest*, iii. no. 2, Aug. 1877, pp. 35, 36.

À propos of some pleasantries lately published in *Nature* against the idea that birds hibernate, the writer, whom the well-known Mr. G. A. Boardman, of Calais, Me., represents to me as a proper person, sends the editor the following, in substance:—

Mr. John T. Goss, "a gentleman of intelligence and veracity", informed him that when lumbering in the woods in New Brunswick, in winter, with a great depth of snow, his cook, who was digging out a spring of black mud, came upon "two bank Swallows apparently dead, but dry". These birds were handled by several men full of curiosity; they soon began to revive in the warmth of the camp, and after a little while one of them flew out of the smoke-hole and fell upon the snow; the other was reburied in the mud by the cook.

The writer encloses a letter from A. S. Freeman, of Presque Isle, detailing circumstances of finding birds, said to be Bank Swallows (but which may have been Swifts), "frozen stiff" in the hollow of a felled maple-tree; some of which birds, taken to a warm room, revived and flew about, but were found dead next morning. "They were of a brownish color with white or light bellies, such as we find around holes in the sand banks in the summer."

1877. "THE REVIEWER OF PALMÉN'S WORK." The "Hibernation" of Birds < *Nature*, xvi. no. 395, May 24, 1877, p. 61.

Regards the incident Sir John McNeill relates as "miraculous", without impugning the relator's veracity; dismisses Herr Rohweder's account to the "limbo of legends", and still appears pleased with himself—*O fortunatos nimium!*

1877. SPALDING, D. A. The First Swallow at Menton [France] < *Nature*, xv. no. 388, Apr. 5, 1877, p. 488.

1877. SPALDING, D. A. The Swallows and Cuckoo at Menton [France] < *Nature*, xv. no. 390, Apr. 19, 1877, p. 528.

1877. "X." The Hibernation of Swallows < *Nature*, xvi. no. 394, May 17, 1877, p. 43.

Cites note in Ornithologisches Centralblatt of May 1, 1877, from J. Rohweder, who certifies to the competency and trustworthiness of the observer who communicated to him the facts here given. Many hibernating Swallows were found and handled.

The foregoing titles, it will be observed, are only of special papers on the subject—the bulk of the literature being found in works or tracts of more general character. I will give two instances of the style in which the subject appears in literature. Peter Kalm, the celebrated traveller, wrote from New Jersey in 1750, that he had observed Barn Swallows on the 10th of April (new style), sitting on planks and posts, as wet as if they had just come out of the sea; and the famous John Reinhold Forster, editor and translator of Kalm, adds very explicit testimony of his own, he being an eye-witness. Dr. Wallerius, the distinguished Swedish chemist, wrote in 1748, that he had more than once seen Swallows assembling on a reed, till they were all immersed; and that he had likewise seen a Swallow caught

in a net under water, revived in a warm room, where it fluttered about and then died. Mr. Klein, secretary of Dantzick, procured many sworn affidavits of such occurences. The mother of the Countess Lehndorf said she had seen a bundle of Swallows brought from Lake Frith-Haff, which were revived in a room and flew about. Count Schlieben gave a stamped instrument importing that he had seen Swallows caught in a net, had taken one of them in hand, brought it into a warm room, where it lay about an hour, when it began to stir, and soon after flew about. Fermier-Général Witkowski made affidavit that in 1740 three Swallows had been netted in a pond at Didlaeken, and that in 1741 he got two Swallows from this pond, where they were caught in his presence, and took them home, where they revived, fluttered about, and died three hours after. Amtmann Bönke saw nine Swallows brought up in a net from under the ice, and distinctly observed their reanimation. Forster rehearses more testimony to the same effect, and continues:—"7thly, I can reckon myself among the eye-witnesses of this paradoxon of natural history. In the year 1735, being a little boy, I saw several *Swallows* brought in winter by fishermen, from the river *Vistula* to my father's house, where two of them were brought into a warm room, revived and flew about. I saw them several times settling on the warm stone, (which the *Northern* nations have in their rooms) and I recollect well that the same forenoon they died, and I had them, when dead in my hand. . . . In January [1754] the lake of *Lybshau*, belonging to these estates, being covered with ice, I ordered the fishermen to fish therein, and in my presence several *Swallows* were taken; which the fishermen threw in again; but one I took up myself, brought it home, which was five miles from thence, and it revived, but died about an hour after its reviving." *

Williams, writing of the Swallows of Vermont in 1794, says that at Danby in that State, there were reports that some of these birds had been taken out of a pond in that town some years previously. A man in digging up roots of the pond lily found several Swallows "enclosed in the mud; alive, but in a torpid state". He continues:—"I saw an instance which puts the possibility of the fact beyond all room for doubt. About the year 1760, two men were digging in the Salt marsh, at Cambridge, in Massachusetts, on the bank of the Charles River, about two feet below the surface of the ground, they dug up a Swallow, wholly surrounded and covered with mud. The Swallow was in a torpid state, but being held in their hands, it revived in about half an hour. The place where this Swallow was dug up was every day covered with the salt water, which at every high tide, was four or five feet deep. The time when this Swallow was found was the latter part of the month of February."†

I might go on almost indefinitely with this sort of thing, but I have adduced enough to show the character of the evidence we possess, and this is my only object.

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* Peter Kalm's Travels into North America, Forster's Ed., vol. ii. pp. 140–144, 1771. [Quoted at second hand and abridged from *Merriam*, Trans. Conn. Acad. i. 1877, pp. 28, 29.]

†The Natural and Civil History of Vermont. By Samuel Williams. Walpole, N. H. 1794. pp. 115, 116. [Quoted after Merriam, *l. c.*]

Architecture of Swallows

Next after the migration, the nidification of Swallows is the best-known point in their natural history. The nesting and the eggs of all the North American species have become perfectly well known, such is the abundance of the birds, such their familiarity with man. Their buildings illustrate two striking propositions:—

1. The versatility of architectural genius within the limits of a small and perfectly natural group of birds.

2. The influence of man in modifying the architectural customs of birds.

Every one of the North American species nests in a way peculiar to itself, even those which are most alike being distinguished by some circumstance, either of the nest itself, or of the freight it bears; and all the species, with a single probable exception, have successively yielded to the modifying influences of the gradual settlement of the country by man. The Violet-green Swallow has held out the longest, and it is only very recently, in fact, that we have learned of its acceptance of the new order of things. The time when the Barn Swallow forsook its primitive custom of building has passed out of mind; the modification is so profound, that this bird now very rarely nests elsewhere than in artificial resorts which man presents to its choice. In some cases, the change is complete in settled portions of the country, while elsewhere the same species retains its primitive habits. Thus the Cliff or Eave Swallow now nests habitually on buildings in the Eastern United States, though it still glues its curious mud fabrics to the faces of cliffs in the West; and the Purple Martin nests indifferently in boxes set up for its use, and in holes in trees. In the case of the Cliff Swallow, another curious result of the settlement of the country is seen in the gradual extension of the range of the species. Formerly restricted to regions abounding in natural nesting-sites, it has spread into populous districts, where the eaves of buildings afford a convenient substitute for the original breeding-places. The Rough-winged Swallow originally nested, and generally still nests, like the Bank, in holes dug by itself in the ground; but it now often avails itself of the nooks afforded by bridges, piers, and other contrivances of man. I should not be surprised if this bird were an immigrant, into some parts at least of North America,

of comparatively recent naturalization among us, attracted at length by conveniences for nesting. The Bank Swallow, the most cosmopolitan species of the whole family, seems to retain its wonted ways most sturdily of any—a fact perhaps explained by the highly exceptional character of its nidification.

To all this there is no parallel among our birds. Various species, indeed, now regularly accept the artificial nesting-places man provides, whether by design or otherwise. Such is notably the case with several kinds of Wrens, with at least one kind of Owl, with the Bluebird, the Pewit Flycatcher, and especially the House Sparrow. Various other birds occasionally avail themselves of like privileges, still retaining in the main their original habits. But in no other case than that of Swallows is the modification of habit so profound, or so nearly without exception throughout an entire family. Next after the Swallows, the Wrens appear to yield the most readily, and all of our species will probably become modified in due time after the fashion of the House Wren. But the geographical distribution of no other birds than Swallows has been thus far affected by increased facilities for nesting.

As architects, our Swallows are separable into several categories, according to the order of the structures they build. It will be remembered that they are weak-billed, feeble-footed birds, without the instruments required for the weaving of intricate fabrics, or the elaboration of ornate and highly finished dwelling-places. So varied is their workmanship, so curious are some specimens of their art, that we can hardly refer their structures to any single plan; yet, in general, we may discern in their nesting the tendency, usually seen in weak-footed birds, to retire into holes, into which are brought, and artlessly arranged, the materials that are to receive the eggs. At least, such seems to be the primitive custom; and it is still the wont of the Purple Martin and of the Violet-green and Rough-winged and Bank Swallows. A modification of this is witnessed in the Barn Swallow, which builds by preference in corners, in any angle between converging plane surfaces. The most remarkable extreme is that the Cliff Swallow furnishes, where we can trace the most elaborate retort-shaped mud receptacles, back through less perfected purse-like structures, to the early idea of the bird, which was simply the walling-up of chinks and crannies on the face of cliffs, or the formation of a cup like projection. In the material employed,

we likewise see the progressive steps by which, from the mere deposit of soft material in a natural hollow, the Swallows began to project their fabrics out beyond the base of support; securing the required coherence of the materials, not by weaving, which to them was impracticable, but by plastering with mud. Thus we gradually reach those wonderful structures which the Cliff Swallow builds entirely of mud, with only a little hay or a few feathers for a lining. The case of the Bank Swallows (*Cotyle* and *Stelgidopteryx*) is peculiar. It is the rule with weak-billed and small-footed hole-inhabiters that they accept natural cavities ready-made to their purposes. Yet some of the feeblest of the Swallow tribe dig their own holes in the ground, exactly as the Kingfisher excavates its gallery, or the Woodpeckers chisel out their nesting-places in trees. The fact, then, that Swallows are naturally hole-breeders, taking possession of such cavities as come to hand, serves to explain their readiness to accept the convenient artificial nesting-sites that man provides. Even the Cliff Swallow, when nesting on buildings, selects a site under eaves, and thus in a quasi-cavity. The fact that the Bank Swallow habitually excavates a hole for itself, instead of accepting a ready-made retreat, renders intelligible the fact that it still maintains its primitive ways, instead of yielding, like the others, to modifying surroundings. But the Rough-winged Swallow, which normally breeds quite like the Bank Swallow, is already yielding to the times, and in the East now generally nests in or about buildings, such as bridges and piers; and we may confidently anticipate the time when the Bank Swallow shall go and do likewise.

The nesting of our Swallows now presents the following categories of method:—

1. Holes in the ground, dug by the bird itself, slightly furnished with soft material: *Cotyle riparia*, *Stelgidopteryx serripennis*.

2. Holes in trees or rocks not made by the birds, fairly furnished with soft material: *Progne subis*, *Tachycineta bicolor*, *Tachycineta thalassina*.

3. Holes, or their equivalents, not made by the birds, but secured through human agency, and more or less fully furnished with soft material, according to the shallowness or depth of the retreat. (*Formerly, no species; now, all the species excepting Cotyle riparia.*)

4. Holes constructed by the birds, of mud, plastered to sur-

faces, whether artificial or natural, and loosely furnished with soft material. This is seen in perfection in the nesting of *Petrochelidon lunifrons*, and is imperfectly illustrated by the nidification of *Hirundo horreorum*. It has every appearance of an acquired trick, by which these hole-breeders carry out their original instincts on a greatly improved plan.

It should be observed that all of our Swallows have been modified by human agency excepting the Bank Swallow, nesting differently at successive periods; that some of them, like the Purple Martin and the Violet-green Swallow, are still serving their apprenticeship under the new *régime* which the settlement of the country has brought about; and that even the Barn Swallow, which seems so thoroughly changed, still sometimes nests in the West in its primitive fashion. Those whose acquired habits have become thoroughly ingrained are now pretty constant in their adherence to a single plan of architecture; but the Violet-green Swallow, for instance, at present nests in a very loose fashion, according to circumstances.

There is no question of the fact, that some of the Swallows which in the East now invariably avail themselves of the accommodations man furnishes, in the West live still in holes in trees, rocks, or the ground. Thus I have found Purple Martins breeding in Arizona nowhere but in the hollows of trees, chiefly deserted Woodpeckers' holes; and I have known Barn Swallows to nest on embankments of earth. In the West, again, where the Cliff Swallows habitually affix their nests to the irregular surfaces of cliffs, retort-shaped structures are not so often perfected as when the birds build against the smooth sides of houses. In this case, however, it may be a question which is the original method, which the later modification. For in many special cases, the Eave Swallows have been known to build mere open cup-shaped nests affixed to buildings, quite like the rafter-nests of the Barn Swallow, when they had similar bases of support to work upon.

There is another curious fact, which shows that the nidification of Swallows may be changed and improved, without any variation in the character of the site selected, but apparently as the result of reflection and some degree of ratiocination. This is the case with the common House Martin, *Chelidon urbica*. I quote the words of Dr. Brewer (Am. Nat. xii. 1878, 36):—"A few years ago it was discovered by accident that within fifty

years there has been a wonderful change in the manner in which the common house martin of Europe builds its nest. Formerly their nests were globular in shape, with a small rounded opening hardly large enough to admit the parent birds comfortably. Such are all the old nests in museums, such the descriptions of all writers, half a century ago. These nests were inconvenient, only one bird could come at a time to the opening to be fed. Long before the young could leave their nest they must have been uncomfortably crowded in their ill-ventilated and close quarters. Some time within the half century this entire species has made a great advance and wonderful changes in the whole style of their nest. Instead of a sphere, the nest is simply hollow, semi-oval, roomy, airy, and comfortable, stronger in its attachments, with increased facilities for access, better protected, both from the rain and from enemies. Unfortunately, no one observed just when this remarkable change in their architecture took place. We know not if it was gradual or sudden, or how long it was in becoming general. But surely no one can pretend that all this was the result of mere instinct!"

Connected both with the migration and nidification of Swallows are some remarkable facts relating to the return of the same pair of birds to the same nest year after year. In the nature of the case, this is difficult to determine with certainty; but observations which have not seldom been made on birds that were marked by some recognizable peculiarity have established the fact beyond question. Far from being singular, however, it accords with many observations made upon birds of other families. How marvellous, how admirable, how complex and subtile, must be the mental faculties of such humble creatures, who can find their homes again with unerring precision, after journeying for thousands of miles!

The eggs of Swallows differ as much as their modes of nesting. As might be expected from consideration of the slender-bodied form of the birds, the eggs are rather narrow, elongate, and pointed. In the typical hole diggers, who retain their original habits most tenaciously, the eggs are pure white, as in the case of the Bank Swallow, and as the rule is with birds which, like Owls, Kingfishers, Woodpeckers, and many others, lay in holes. Many Swallows' eggs, however, are colored, and, in fact, profusely speckled with reddish and brown shades. I presume, without the slightest proof, but judging by reason-

able analogy, that Swallows' eggs were originally or primitively white, and that they became colored somewhat according to increasing degree of exposure to which they may have been subjected during the long time in which the nesting habits of the birds have undergone modification.

1. Eggs pure white, unmarked: *Tachycineta bicolor*, *T. thalassina*, *Cotyle riparia*, *Stelgidopteryx serripennis*, *Progne purpurea*.

2. Eggs thickly speckled: *Hirundo horreorum*, *Petrochelidon lunifrons*.

I have at hand the following titles of articles relating to the habits of Swallows, with special reference to their nidification :—

1774. White, G. Account of the House Martin, or Martlet. < *Philos. Trans.* lxiv. pt. i. 1774, pp. 196–201.

Habits of *Chelidon urbica*.

1775. White, G. Of the House-Swallow, Swift, and Sand-Martin. < *Philos. Trans.* lxv. pt. ii. 1775, pp. 258–276.

Habits.

1831. Steel, J. W. Swallows. < *Am. Journ. Sci.* xix. 1831, pp. 356, 357.

Nidification of *Hirundo lunifrons*.

1831. Woodruff, S. Notice of a Barn Swallow in a letter to the Editor dated Windsor, Turky [sic] Hill, June 7th, 1830, from Samuel Woodruff. < *Sillim. Am. Journ. Sci.* xix. 1831, pp. 172, 173.

Description and nidification of *Hirundo lunifrons*.

1832. Carmichael, *Capt.* Capitain Carmichael über Schwalben. < *Oken's Isis*, Bd. xxv. 1832, p. 589.

Auszug aus d. Edinb. Philos. Journ. 1819, p. 421.

1832. Couch, J. Nests of the Swallow and Martin. < *Loudon's Mag. Nat. Hist.* v. 1832, pp. 735, 736.

1832. "H. B." Remarks on [habits of] Swallows. < *Loudon's Mag. Nat. Hist.* v. 1832, pp. 285–287.

1832. "H. B." Instinct in the Martin (Hirundo urbica). < *Loudon's Mag. Nat. Hist.* v. 1832, p. 735.

1832. Norman, A. "Strödda Underättelser. [Om Svalors parning.] < *Tidsk. f. Jägare o. Naturf.* i. 1832, p. 320."

Not seen—title from von Friesen, Öfv. Sver. Orn. Litt.

1833. "A Friend of C. P.'s." The Swallow, a capricious Architect. < *Loudon's Mag. Nat. Hist.* vi. 1833, pp. 454–456.

1833. Bree, W. T. A late Brood of young Martins. < *Loudon's Mag. Nat. Hist.* vi. 1833, pp. 70–72.

1833. Clarke, W. B. Birds' Nests in singular Places. < *Loudon's Mag. Nat. Hist.* vi. 1833, pp. 523, 524.

Swallow's nest in heel of a shoe in an inhabited apartment.

1833. "J. D." On Martins and Swallows. < *Loudon's Mag. Nat. Hist.* vi. 1833, p. 524.

Swallow's nest in crank of a bell-wire, in passage of an inhabited house.

1833. "R. Y." Pertinacious Perseverance in the Martin (Hirundo urbica L.) in renewing its Nest in one Place. < *Loudon's Mag. Nat. Hist.* vi. 1833, p. 153.

1833. WHIDDON, W. By what harmless Means can Martins and Swallows be induced to cease building and breeding in the Places in which they have been long allowed to build and breed? < *Loudon's Mag. Nat. Hist.* vi. 1833, p. 456.

1834. FENNELL, J. To prevent Martins and Swallows affixing their Nests. < *Loudon's Mag. Nat. Hist.* vii. 1834, p. 82.

Soap the place.

1836. MOSS, S. Martin's Nest occupied by a House Sparrow. < *Loudon's Mag. Nat. Hist.* ix. 1836, p. 545.

1836. TAYLOR, S. What is the Most Effectual Method of Preventing the House Martin (Hirundo urbica Lin.) from Building in Particular Spots? < *Loudon's Mag. Nat. Hist.* ix. 1836, p. 484.

Soap, says the editor.

1840. BREWER, T. M. [On the habits of Hirundo fulva (*i. e.*, of Petrochelidon lunifrons).] < *Sillim. Am. Journ. Sci.* xxxviii. 1840, pp. 392, 393.

1841. ROBERT, E. [Note sur les nids des Hirondelles à rivage (Cotyle riparia).] < *Compt. Rend. de l'Acad. Sci.* xiii. 1841, p. 1034.

1842. ROBERT, E. Nests of the Hirundo riparia. < *Ann. Mag. Nat. Hist.* viii. 1842, p. 476.

1843. ATKINSON, J. C. Note on the Nests of Martins [Chelidon urbica] on Sand-stone Rocks. < *Zoologist*, i. 1843, pp. 246, 247.

1843. ATKINSON, J. C. Note on certain Nests of the Swallow [Hirundo rustica] at Kelvedon. < *Zoologist*, i. 1843, p. 354.

1843. ATKINSON, J. C. Note on the Nesting-place of the Swallow. < *Zoologist*, i. 1843, p. 354.

1843. HEPBURN, A. Notes on the Swallow [; its breeding in chimneys]. < *Zoologist*, i. 1843, p. 147.

1843. HEPBURN, A. Note on [the nests of] the Sand-martin [Cotyle riparia]. < *Zoologist*, i. 1843, pp. 146, 147.

1843. HEWETT, W. Note on the Nesting-place of Swallows. < *Zoologist*, i. 1843, pp. 353, 354.

1843. TARRAGON, L. DE. Note sur les mœurs de l'Hirondelle de fenêtre [Chelidon urbica]. < *Revue Zoologique*, vi. 1843, pp. 323–325.

1844. "ANON." "Curious Locality for a Nest" [of the Swallow]. < *Zoologist*, ii. 1844, p. 657.

From the Hampshire Advertiser, July 13, 1844.

1844. BARTLETT, J. P. Note on the Nesting-places of the Swallow. < *Zoologist*, ii. 1844, pp. 446, 447.

1844. Duncan, R. D. Note on the Swallow. < *Zoologist*, ii. 1844, p. 447.

1844. Sladen, E. H. M. Note on the Martin (Hirundo urbica). < *Zoologist*, ii. 1844, p. 763.

1845. Bold, T. J. Nidification of the Swallows. < *Zoologist*, iii. 1845, pp. 939, 940.

1845. Hardy, J. Nesting of the Swallow. < *Zoologist*, iii. 1845, pp. 868–870.

1845. Hussey, A. Nesting of the House Martin. < *Zoologist*, iii. 1845. p. 870.

1851. Hazard, J. P. [On the habits of the Rocky Mountain Swallow (Petrochelidon lunifrons).] < *Proc. Acad. Nat. Sci. Phila.* v. 1851, pp. 141, 142.

1852. Brewer, T. M. [On the Distribution and Habits of the Cliff Swallow, Hirundo lunifrons.] < *Proc. Bost. Soc. Nat. Hist.* iv. 1852, pp. 270,271.

1853. Jaeckel, —. Ein vereinzelt nistendes Uferschwalben-Paar [Cotyle riparia]. Zusatz vom Herausgeber. < *J. f. O.* 1853, i. pp. 367, 368.

1854. Rindfleisch, A. Ein Brutplatz der Hirundo rupestris in Deutschland. < *Naumannia*, iv. 1854, pp. 191, 192.

1857. Pässler, W. Zur Naturgeschichte der Sylvia cisticola und Hirundo rufula. < *J. f. O.* 1857, v. pp. 115–118, Taf. i. Fig. A und B.

The plate represents the nests of *H. rufula*.

1857. Rohnert, —, *Dr.* Nistkolonie von Hirundo rupestris. < *Naumannia*, vii. 1867, Hft. i. pp. 78, 79.

1857. Slaney, W. H. [Habits of] Swallows. < *Zoologist*, xv. 1857, pp. 5755, 5756.

1857. Smith, R. B. Swallows building against a House. < *Zoologist*, xv. 1857, p. 5790.

1857. Weir, J. J. Note on the Nidification of the Swallow (Hirundo rustica). < *Zoologist*, xv. 1857, p. 5832.

1858. Hadfield, H. W. Nidification of Swallows. < *Zoologist*, xvi. 1858, pp. 6241, 6242.

1858. Hewitson, W. C. Notes on the [habits of the] Swallow. < *Zoologist*, xvi. 1858, p. 5921.

1859. Couch, J. Nidification of Birds: the Common Martin [Chelidon urbica]. < *Zoologist*, xvii. 1859, p. 6535.

1860. Krüper, T. Die Schwalben Griechenlands. < *J. f. O.* 1860, viii. pp. 271–284.

Extended account of the habits of *H. rufula, H. rustica, H. boissonneaui, H. urbica, H. rupestris, H. riparia.*

1862. Dalton, J. Sand Martins' [Cotyle riparia] Nests in the Walls of an Old Priory. < *Zoologist*, xx. 1862, pp. 7844, 7845.

1862. Ranson, J. Nesting of the Chimney Swallow [Hirundo rustica]. < *Zoologist*, xx. 1862, p. 7937.

1863. Carter, S. Late Breeding of the House Martin [Chelidon urbica]. < *Zoologist*, xxi. 1863, p. 8846.

1867. Clark-Kennedy, A. Martins "building-in" a Sparrow. < *Zoologist*, 2d ser. ii. 1867, p. 915.

1867. Clifton, *Lord*. A strange Trap for Swallows [weathercocks]. < *Zoologist*, 2d ser. ii. 1867, p. 990.

1867. Clifton, *Lord*. Martins and Wagtails [their antipathy]. < *Zoologist*, 2d ser. ii. 1867, p. 990.

1867. King, S. Late [latter part of November] Swallow's nest. < *Zoologist*, 2d ser. ii. 1867, pp. 606, 607.

1867. Schacht, H. Merkwürdiges Schwalbennest [H. urbica.] < *Zool. Gart.* viii. 1867, p. 444.

1868. Meyer, R. Doppelehe einer männlichen Rauchschwalbe (Cecropis rustica L.) < *Zool. Gart.* ix. 1868, pp. 77, 78.

A case of bigamy.

1869. Fowler, A. The Sand Martin. < *Am. Nat.* iii. 1869, pp. 116–119.

Account of the habits of *Cotyle riparia*.

1869. Hoy, P. R. [On the Habits of Cotyle serripennis and Empidonax flaviventris.] < *Proc. Bost. Soc. Nat. Hist.* xii. 1869, p. 400.

1869. Nicholls, H., *jr*. Cuckoo in a Swallow's Nest. < *Zoologist*, 2d ser. iv. 1869, p. 1866.

1870. Behn, —. [Ueber eine abweichende Form von Nestern der Fensterschwalbe (Hirundo urbica, L.).] < *Zool. Gart.* xi. 1870, pp. 160, 161.

Auszug aus d. *Comptes Rendus*, lxx. 1870, p. 492.

1870. Noulet, J. B. Our two Swallows and their Nests. < *Ann. Mag. Nat. Hist.* (4), vi. 1870, pp. 270, 271.

1870. Pouchet, A. On the Transformation of the Nests of the House-Martin (Hirundo urbica, Linn.). < *Ann. Mag. Nat. Hist.* 4th ser. v. 1870, pp. 307, 308.

From *Comptes Rendus*, lxx. 1870, pp. 492–496.

1870. Sharpe, R. B., and Dresser, H. E. On some new or little-known points in the Economy of the Common Swallow (Hirundo rustica). < *Proc. Zool. Soc. Lond.* xxxviii. 1870, pp. 244–249.

1870. Wharton, C. B. Sand Martin [Cotyle riparia] Nesting in a Tree. < *Zoologist*, 2d ser. v. 1870, p. 2344.

1872. Hudson, W. H. On the Habits of the Swallows of the Genus Progne met with in the Argentine Republic. With notes by P. L. Sclater. < *Proc. Zool. Soc. Lond.* 1872, pp. 605–609.

Allows only four American spp., *P. purpurea*, *P. chalybea*, *P. dominicensis*, *P. tapera*.

1872. Hudson, W. H. Further Observations on the Swallows of Buenos Ayres. < *Proc. Zool. Soc. London*, 1872, pp. 844–846.

Cf. P. Z. S. 1871, 326; 1872, 605.

Abnormal Coloration of Swallows

These birds are so constantly under observation, that it is no wonder that many instances of albinism have been observed and recorded, without indicating, however, that Swallows are susceptible of this abnormality to any unusual extent. The only white Swallow that ever fell under my own observation was a specimen of *Cotyle riparia*, shot at Washington, D. C., by my brother, Louis D. Coues, on the 23d of August, 1859, as recorded by me in the American Naturalist, ii. 1868, p. 161. This individual was not pure white, however, merely presenting an extremely faded or bleached-out appearance, the normal pattern of coloration being still discernible. This bird was flying in company with hundreds of others, of several species, who seemed to be pursuing and harassing it, on account of its unenviable distinction. This was a very human occurrence—for singularity of dress is always the signal for attack, and distinction of any kind usually invites target-practice.

Mr. Ruthven Deane, in a paper (Bull. Nutt. Club, i. 1876, 21) on "Albinism and Melanism among North American Birds", remarks that albinism among the *Hirundinidæ* is generally of a pure white, or a strong yellowish cast, and instances albinotic specimens he has seen of *Hirundo horreorum*, *Tachycineta bicolor*, *Petrochelidon lunifrons*, and *Progne purpurea*.

The following are titles of a few papers specially bearing on the subject of albinism among Swallows:—

1731. Wallin, G. "De Hirundine alba, Regi nostro Friderico I oblata anno 1727, brevis dissertatio. Auctore G. Wallin, Fil. < *Acta. Liter. et Scient. Sveciæ*, 1731, pp. 98–111."

Äfven Såsom Disput. Upsaliæ, 1733. 4to. pp. 15, enl. Warmholtz.—(v. Friesen.)

1820. Traill, T. S. White Swallow [Hirundo rustica]. < *Edinb. Philos. Journ.* ii. 1820, p. 391.

1846. Anon. Note on a White Swallow. < *Zoologist*, iv. 1846, p. 1500.

1848. Ellman, J. B. White Variety of the Swallow (Hirundo rustica) and Pale Variety of the Martin (H. urbica). < *Zoologist*, vi. 1848, p. 2021.

1848. Wolley, G. A Martin (Hirundo urbica) with the Middle Tail-feather white. < *Zoologist*, vi. 1848, p. 2303.

1849. Colman, J. F. White Variety of the Swallow. < *Zoologist*, vii. 1849, p. 2392.

1849. Garth, J. C. Albino Variety of the Swallow (Hirundo rustica). < *Zoologist*, vii. 1849, p. 2568.

1850. Curtler, M. [Albinotic] Variety of the Swallow (Hirundo rustica). < *Zoologist*, viii. 1850, p. 2700.

1855. Doubleday, H. White Swallow. < *Zoologist*, xiii, 1855, p. 4871.

1855. Hussey, A. A White Swallow obtained in East Kent. < *Zoologist*, xiii. 1855, p. 4559.

1863. Saville, S. P. Slate-coloured Variety of the Chimney Swallow. < *Zoologist*, xxi. 1863, p. 8824.

1864. Anon. Weisse Schwalben. < *Zool. Gart.* v. 1864, p. 269.

1864. Anon. A White Swallow. < *Zoologist*, xxii. 1864, p. 8887.

1864. Boulton, W. W. White Swallow (Hirundo rustica) near Beverley. < *Zoologist*, xxi. 1863, p. 8825.

1866. Clogg, S. White Martin. < *Zoologist*, 2d ser. i. 1866, p. 33.

1866. Watkins, C. White Swallows. < *Zoologist*, 2d ser. i. 1866, pp. 455, 456.

1867. Hesse, B. Creamcoloured Sand Martin. < *Zoologist*, 2d ser. ii. 1867, p. 561.

1868. Cornalia, E. Sopra due casi di Albinismo negli Uccelli. < *Atti della Soc. Ital. di Sc. Nat.* x. pp. 449–458.

Not seen—title from Zool. Rec. *Passer montanus* and *Chelidon urbica*.

1868. Smith, C. Curious Variety of the House Martin. < *Zoologist*, 2d ser. iii. 1868, p. 1058.

1869. Barrington, R. M. Albino Sand Martin. < *Zoologist*, 2d ser. iv. 1869, pp. 1847, 1848.

1870. Atkinson, F. P. Albino Barn Swallow [Hirundo horreorum]. < *Am. Nat.* iv. 1870, p. 127.

1871. Brooke, A. B. White Sand Martin. < *Zoologist*, 2d ser. vi. 1871, p. 2440.

1871. Walsh, W. H. White House Martin. < *Zoologist*, 2d ser. vi. 1871, p. 2806.

1872. Whitaker, J., *jun.* White Swallow. < *Zoologist*, 2d ser. vii. 1872, p. 3314.

1874. Whitaker, J. White Swallow in Nottinghamshire. < *Zoologist*, 2d ser. ix. 1874, pp. 4238, 4239.

General Habits and Traits of Swallows

Having already spoken at some length of the two most noticeable points in the economy of Swallows—their migrations and their architecture—I may continue with some of the other habits which birds of this family possess in common; for the group is so homogeneous that much of the material we have acquired for separate biographies of the species furnishes the occasion for remarks applicable to all.

The flight of Swallows might be inferred from inspection of the perfected wing-structure, not only as to the lengths to which the act can be sustained without fatigue or injury, but to the peculiar ease, grace, and buoyancy of the aërial evolutions so characteristic of Swallows. The birds of no other group of *Passeres* fly quite like Swallows, but the Swifts (*Cypselidæ*) are nearly identical with Swallows in this respect, and so are the Terns, or *Sterninæ*, which, indeed, are commonly called "Sea Swallows" from this very circumstance. The Hummingbirds have wings constructed on much the same plan as those of Swallows, and are among the few birds, if they be not the only ones, that surpass Swallows in volatorial exploits. The type of the wing is quite different from that furnished by the great ocean wanderers like the *Procellariidæ*, or Petrels, the flight of which is practically limitless in duration. The wing of such birds—especially of the Albatrosses—is inordinately lengthened in all its segments—the upper arm and forearm as well as in the pinion or hand; a conformation which results in long, strong, measured wing-beats, as the end of the wing traverses the arc of too large a circle to move with great celerity. The upper segment of the Swallows' wing, on the contrary, is shortened, the development of wing being increased in the terminal segment, or pinion, and the large feathers it bears. Such a wing is more deftly handled, and wonderful power of arresting or directing as well as of accelerating the bird's course, is assured by this means. The most graceful flyers among the Swallows are the lashing-tailed species of *Hirundo* proper, like the Barn Swallow, which glides, soars, and sweeps with extraordinary facility, and instantaneously arrests or diverts its flight at a touch of the guiding helm. The motion of the Swallow skimming the ground, and "quartering" in zigzag after its prey, has been aptly compared to the coursing of the greyhound. No one who has attentively observed the flight of Swallows can have failed to notice their peculiar "towering", when they rise abruptly with few vigorous strokes, and seem to hang suspended for a moment, before falling with great velocity through the beautiful curve of the cycloid—with half-gathered wings, and at such little loss of impetus by friction that they avail themselves of this peculiar line to rise nearly to their former level without muscular effort. Sometimes their course is as straight as an arrow's, and only less swift—sometimes they hover and flutter at seem-

ing random, and not the least marvellous of their feats is the spirited dash they make, with unerring aim, to enter the narrow window or belfry, and settle, as light as a feather, with joyous twittering, on the nest.

The feeding of Swallows is almost an inference from the structure of the bill, wings, and feet. These delicate birds have very weak bills, but very capacious mouths, and seem not very dainty in their choice of food. They would soon be starved if forced to gather food on foot—on the wing, no one of the smaller flying insects is safe from that gaping bill, split to the very eyes, propelled with enormous velocity into their ranks, and capable of following after, to close on the most agile and devious bug. Swallows feed on the wing, and this prime point in the economy of these indefatigable insect-hunters is signalized in the very names the birds have acquired in various languages. Not only the mode of flight, but its direction, whether high or low, and the entire migrations of the birds, turn upon the prime point of food-supply; and upon this hinges, secondarily, the recognized relation between the movements of Swallows and the weather and seasons. The numbers of insects that Swallows destroy in the aggregate is simply incalculable—in fact, beyond the reach of our usual notions of numeration—and the holocaust includes a large proportion of annoying or injurious kinds. The loquacity of the birds, and the unseemly hours they keep, babbling to an unaired world, together with the litter they make about the premises, sometimes brings them into disfavor, or even causes them to be summarily dispossessed. The tempting targets they offer when in flight, taxing the skill of the most expert marksman, is another cause of their wanton and cruel destruction. But the most determined and calculating utilitarian should be brought to see the impolicy of killing Swallows, and the sportsman be besought to consider its inhumanity. *Needless taking of any life is a crime against nature*—we may well pause at this, even if no spark of sentiment should kindle indignation at the thought of cutting short such useful, bright, and joyous life. Things both useful and beautiful are not so common that we can afford to sacrifice them in vain. The rowdy boys and all the crew of tramps and potters of the gun who shoot Swallows for sport may be seriously admonished that these birds are worth more to society than their idle, vicious selves.

The song of Swallows strikes a single key-note—the theme

runs through the entire fugue—the ἴτυς, ἴτυς, of the Greek mythology is reiterated forever. Among our species, at any rate—and I presume the exotics are much the same in this respect—the Swallow's voice is unmistakable. The tone is rather thin and sharp, and the pitch is high; the method of delivery is quick, nervous, and even jerky—it is mere twittering, indeed, as always called, rather than any higher art of singing. But the pieces are given with such volubility, vigor, and *verve*—they are so earnest, artless, and spontaneous, animated with such a bright and joyous spirit, that we forget to criticise, and even own the Swallow has a sympathetic voice. The simple notes are susceptible of much modulation, and capable of intoning the varied passions that these sanguine birds experience momentarily; while the different species, moreover, have each their own tone and inflections, easily discriminated by the accustomed ear. If I may add, that our Swallow medley touches a very secret chord of home associations, there is no wonder that it often moves us when more ambitious music fails to please.

Among the leading traits of the Swallow tribe, no one can fail to recognize their sociability. "Troops of Swallows" is a familiar phrase. The birds are not gregarious, in one sense,—not like Blackbirds for example, or Bobolinks in the autumn, flying in compact flocks, as if animated by a common impulse,—for no two Swallows bend their flight alike. But in places where, for any reason, the attraction is common, Swallows swarm. In foraging for insects on their "happy hunting ground", thousands eddy and whirl inextricably confused in flying currents, each one the vortex of a tiny maelstrom. In the consultation over a projected journey, thousands seek each others' countenance, perching in long lines upon the ridge-pole, the telegraph, the picket-fence. On warm dry days, the Swallows flock to the pools by the wayside, enclosing the grateful water with a pretty frame, or dallying over the surface with the yellow butterflies. But in nothing is the strength of social instincts more apparent—in nothing is the amiability of these cheery, genial birds displayed to more advantage—than in their nesting. Every rafter of the barn may possess its pair in peace, and every box beneath the eaves its contented, orderly inmates. The stretch of river-bank, the loamy crest of the quarry, may be honey-combed with burrows, and never a sign of strife in the settlement. Nay, more: among the Swal-

lows, perhaps alone of our birds, do we find that rare climax of sociability which the actual clustering of nests betokens; and a colony of Cliff Swallows shows that a high degree of communism is not incompatible with perfect decency and decorum. Such free, impatient, and impulsive birds as Swallows, one might fear, could not sustain too close relations without at least occasional breaches of the peace; but the harmony remains unbroken. This surely speaks well for the disposition of the birds, arguing many a good quality beyond mere amiability; it indicates forbearance, self-respect, fidelity in all relations, and regard for another's rights; it reasserts that liberty does not mean license, and that freedom is to will to do right.

Some who may be less interested in Swallows than I admit myself to be, or lack a sentiment I am willing to betray, may think the picture overdrawn, and ask for the other side of a shield that seems to me golden. If by this is meant, What are the bad qualities of Swallows? I must admit my incompetency to reply. These birds are said by some to be irascible and pugnacious. But quarrelsome they certainly are not, and their quickness of temper is resolvable into the admirable spirit they display in defence of their home and family. They are said to show special animosity against cats—quite an antipathy, in fact. Who wouldn't, under the circumstances? Which one of us, being a Swallow, could be expected to be fond of cats? These timid and delicate birds sometimes make Puss retire discomfited, such are the spirit and the vigor of their onset against this prowling enemy. Their courage is nowadays often called into action in defence of their homes against those wretched interlopers, the European Sparrows. There is a deadlock here, and the feud is both bitter and relentless, in natural consequence of the Sparrows' total depravity. The Purple Martins, as I know, defend themselves against spoliation of their homes with success, and I hear that even the much weaker White-bellied Swallows, whose action in protecting themselves against outrage I have had no opportunity of studying, have proven no less valiant. I wish that the same could be said of some other birds which the Sparrows attack, harass, and turn out of doors; and to the Swallows in particular,—to every pair of these lovable birds that may nestle with us,—I wish success in resisting invasion, peace, plenty, and every joy that can fill their gentle breasts.

Genus HIRUNDO Linnæus

Hirundo, *L.* SN. 1735–1766. (Included originally all the family, and some birds of another order.)
Cecropis, partly, *Boie*, Isis, 1826.

As here restricted to include only species like the European and American "Barn" Swallows, *Hirundo* is distinguished by the deeply forficate tail, which is nearly or about as long as the wings, and has the lateral feather on each side linear-attenuate and about twice as long as the middle feather. The tail-feathers are spotted. The tarsi are shorter than the middle toe and claw, covered above by feathers for a little distance. The basal joint of the middle toe is partly adherent to both the lateral toes. The bill is of moderate size for this family, of the usual shape, with straight commissure; and the nostrils are lateral and overarched by a membranous scale. The upper parts are glossy and dark-colored. There is a dark pectoral collar. The forehead and under parts are rufous. The tail is spotted with white. The eggs are colored.

The single North American species of *Hirundo* is distinct from *H. rustica* of Europe, but not from the Barn Swallow of Middle and South America. The relationships of the latter have been in question. Baird, in 1865, was "much inclined to doubt whether there is any specific difference", at a time, too, when he pushed distinctions further than is now usually done. In 1872, I admitted Barton's name *horreorum*, which had been current since Baird adopted it in 1858, and in 1874 I suggested the term *erythrogaster* var. *horreorum*, "though even the varietal distinctions are very slight"; but I have now no confidence that the implied distinction from *erythrogaster* Bodd. (=*rufa* Gm. *auct.*) will hold. Mr. Ridgway appears to be of the same mind, to judge from his latest publication on the subject.*

* Rep. Geol. Surv. Fortieth Parallel (Clarence King), vol. iv. pt. iii. Ornithology. By Robert Ridgway. pp. 303–669. Washington: Government Printing Office. 1877.—This important work, long announced, and occasionally cited during the past few years, has at length appeared. The ornithological fascicle, being pt. iii. of vol. iv., issued separately, bears no date, but was published late in 1877. I received my copy Feb. 25, 1878.—See an important bibliographical note on p. 392. It appears that the work, as originally prepared, was stereotyped in 1871–72 (not 1870, as the note states), but never published, the citation of the work having been made meanwhile by Mr. Ridgway, myself, and others from proof-impressions. The original was suppressed, and the stereotype plates were melted in 1876. A single, much-mutilated set of proofs, now (Feb. 28, 1878) in my possession, is the only evidence in existence of the original report.

The American Barn Swallow

Hirundo erythrogastra

Hirundo erythrogaster, *Bodd.* Tabl. PE. 1783, 45; PE. 724, f. 1 (South America).—*Scl.* Cat. AB. 1862, 39.—*Bd.* Rev. AB. 1865, 295.—*Scl.* PZS. 1870, 340.

Hirundo erythrogaster *var.* **horreorum,** *Coues*, BNW. 1874, 85 (in text).

Hirundo erythrogaster, *β.* **horreorum,** *Ridgw.* Rep. Surv. 40th Par. iv. 1877, 441.

Hirundo rufa, *Gm.* SN. i. 1788, 1018, n. 18 (= PE. 724, f. 1 = *erythrogaster* Bodd. "Cayenne to New York").—*Lath.* IO. i. 1790, 574, n. 5 (= Gm. 1018).—*V.* OAS. i. 1807, 60, pl. 30.—*Steph.* Gen. Zool. x. 1817, 88.—*V.* Ency. Méth. ii. 1823, 529, n. 44.—*Bp.* Journ. Phila. Acad. iv. 1825, 257.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 64.—*Nutt.* Man. i. 1832, 601.—*Bp.* CGL. 1838, 9.—*Towns.* Journ. Phila. Acad. viii. 1839, 155.—*Ep.* CA. i. 1850, 339.—*McCall*, Pr. Phila. Acad. 1851, 215.—*Cabot*, Naum. ii. Heft iii. 1852, 65.—*Woodh.* Rep. Zuñi and Colo. R. 1853, 64.—*Thomps.* Vermont, 1853, 97, fig.—*Read*, Pr. Phila. Acad. vi. 1853, 401.—*Bp.* Compt. Rend. xxxviii. 1854, 651.—*Wailes*, Rep. Mississippi, 1854, 318.—*Reinh.* J. f. O. 1854, 438 (Greenland).—*Cass.* Illust. 1855, 243.—*Henry*, Pr. Phila. Acad. 1855, 308.—*Haym.* Pr. Phila. Acad. 1856, 288.—*Gundl.* J. f. O. 1856, 3 (Cuba).—*Kneel.* Pr. Bost. Soc. vi. 1857, 233.—*Bry.* Pr. Bost. Soc. vi. 1857, 115 (Nova Scotia).—*Brew.* N. Am. Ool. 1857, 91, pl. 5, f. 63-67.—*Maxim.* J. f. O. 1858, 101.—*Brew.* Pr. Bost. Soc. vii. 1860, 306 (Cuba).—*Gundl.* J. f. O. 1861, 328, 411 (Cuba).—*Reinh.* Ibis, 1861, 5 (Greenland).—*Kirtland*, Pr. Cleveland Acad. i. 1874, 265.

Cecropis rufa, *Boie*, Isis, 1844, 175.

Hirundo horreorum, *Barton*, "Fragm. Nat. Hist. Penna. 1799, 17".—*Bd.* BNA. 1858, 308.—*Henry*, Pr. Phila. Acad. 1859, 106.—*S. & S.* Ibis, 1859, 13 (Guatemala).—*A. & E. Newt.* Ibis, 1859, 66 (Saint Croix).—*Coop. & Suck.* N. H. Wash. Terr. 1860, 184.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 364.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 317 (New Granada).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 409.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 161.—*Verr.* Pr. Ess. Inst. iii. 1862, 148.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Blak.* Ibis, 1863, 63 (British America).—*Scl.* PZS. 1864, 173 (City of Mexico).—*S. & S.* PZS. 1864, 347 (Panama).—*Lawr.* Ann. Lyc. N. Y. viii. 1864, 97 (Sombrero).—*Allen*, Pr. Ess. Inst. iv. 1864, 65.—*Bd.* Rev. AB. 1865, 294.—*Dress.* Ibis, 1865, 479.—*Coues*, Ibis, 1865, 159.—*Coues*, Pr. Phila. Acad. 1866, 72 (Arizona).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*McIlwr.* Pr. Ess. Inst. v. 1866, 86 (Canada West).—*Coues*, Pr. Ess. Inst. v. 1868, 275.—*Coues*, Pr. Bost. Soc. xii. 1868, 111.—*Brown*, Ibis, 1863, 420 (Vancouver).—*Sumich.* Mem. Bost. Soc. i. 1869, 547 (Vera Cruz).—*Dall & Bann.* Tr. Chic. Acad. i. 1869, 279 (Alaska).—*Turnb.* B. E. Pa. 1869, 19; Phila. ed. 12.—*Coop.* Am. Nat. iii. 1869, 33 (Montana).—*Coop.* B. Cal. i. 1870, 103.—*Atkinson*, Am. Nat. iv. 1870, 127.—*Salv.* PZS. 1870, 184 (Veragua).—*Coues*, Pr. Phila. Acad. 1871, 21.—*Coop.* Am. Nat. iv. 1871, 758.—*Coues*, Key, 1872, 113, f. 54.—*Finsch*, Abh. Nat. Ver. Bremen, iii. 1872, 28 (Alaska).—*Allen*, Bull. MCZ. iii. 1872, 176 (Colorado, up to timber-line).—*Woodh.* Am. Nat. vi. 1872, 173 (albino).—*Gundl.* J. f. O. 1872, 431 (Cuba).—*Aiken*, Pr. Bost. Soc. xv. 1872, 198.—*Scott*, Pr. Bost. Soc. xv. 1872, 223.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 369.—*Trippe*, Pr. Bost. Soc. xv. 1873, 235.—*Snow*, B. Kans. 1873, 5.—*Sears*, Am. Nat. vii. 1873, 751.—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 676, 713.—*Coues*, BNW. 1874, 85.—*Merr.* Am. Nat. viii. 1874, 87, 367.—*Ridgw.* Am. Nat. viii. 1874, 200.—*Allen*, Pr. Bost. Soc. xvii. 1874, 53.—*Dall*, Pr. Cal. Acad. 1874, — (Aleutian Islands).—*B. B. & R.* NAB. i. 1874, 339, pl. 16, f. 9.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 11.—*Hensh.* Rep. Orn. Specs. 1874, 42, 60, 76, 104.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 216.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Nels.* Pr. Bost. Soc. xvii. 1875, 353, 357.—*Bailey*, Bull. Nutt. Club, 1876, 25.—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 17 (Tehuantepec).—*Gentry*, Life-Hist. 1876, 184.—*Minot*, BNE. 1877, 142.

Hirundo rustica, in part, of some early authors.—*Aud.* OB. ii. 1834, 413, pl. 173.—*Aud.* Syn. 1839, 35.—*Aud.* BA. i. 1840, 181, pl. 48.—*Giraud*, BLI. 1844, 35.—*Pratten*, Tr. Illinois Agric. Soc. i. 1855, 600.—*Putn.* Pr. Ess. Inst. i. 1856, 205.—*Jones*, "Nat. Bermuda, 1859, 34".—*Martens*, J. f. O. 1859, 216 (Bermudas).—*Bland*, Smiths. Rep. for 1858, 1859, 287 (Bermudas).—*Willis*, Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).—*Fowler*, Am. Nat. iii. 1869, 12.

Hirundo americana, *Wils.* "AO. i. 1812, 34, pl. 38, f. 1, 2".—*De Witt Clint.* Ann. Lyc. N. Y. i. 1824, 159.—*Bp.* Journ. Phila. Acad. iv. 1825, 256.—*Sw. & Rich.* FBA. ii. 1831, 329.—*Peab.* Rep. Orn. Mass. 1839, 344.—*Lembeye,* Av. Cuba, 1850, 44, pl. 7, f. 2.—*Hoy,* Pr. Phila. Acad. 1853, 307.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 581.—*Bry.* Pr. Bost. Soc. vi. 1857, 115 (Nova Scotia).—*Gieb.* Vög. 1860, 73, f. 135.

Cecropis americana, *Boie,* Isis, 1844, 174.

Hirundo cyanopyrrha, *V.* "N. D. d'H. N. xiv. 1817, 510"; Ency. Méth. ii. 1823, 528, n. 41.

?Hirundo fumaria, *? Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 58 (quotes "*ameriana* Wils.").

Chimney Swallow, *Penn.* AZ. ii. 1785, 429, n. 330 (in part; excl. refs. to Eur. sp.).

Hirondelle à ventre roux de Cayenne, *Buff.* "Hist. Nat. Ois. vi. 607"; PE. 704, f. 1. (Basis of *H. erythrogaster.*)

Rufous-bellied Swallow, *Lath.* Syn. ii. pt. ii. 1783, 566 (based on Buff. PE. 704, f. 1). (Cayenne and New York.)

Hirondelle rousse, *Le Moine,* Ois. Canad. 1861, 142.

Barn Swallow, *of authors.*

HAB.—America. The North American bird inhabits in summer more particularly the United States and adjoining portions of British America, straggling far north, however, to Alaska and Greenland; in winter, Middle America, including the West Indies. Breeds at large in its United States range, in Mexico, and doubtless elsewhere.

CH. SP.— ♂ ♀ *Chalybea, infrà rufa, pectore semitorquato; fronte rufâ; caudâ forficatâ, albo-notatâ.*

FIG. 46.—Details of structure of Barn Swallow, natural size.

♂, adult: Deep lustrous steel-blue; the forehead and entire under parts rufous, generally deepest on the forehead and throat; an imperfect steel-blue collar. Wings and tail blackish, with steel-blue or somewhat greenish gloss; the lateral pair of tail-feathers much lengthened and filiform at the end, all but the central pair with a white spot. Length, 6–7 inches, very variable, according to the development of the tail; extent, 12½–13½; wing, 4½–5; tail, 3 to 5 inches, the fork 2–3 inches deep.

♀, adult: Quite like the ♂, but the colors rather less intense and lustrous.

Young: Lacking in great measure the elongation and attenuation of the lateral tail-feathers, the fork being an inch or less in depth. Similar to the adults, but much duller, and with rather a greenish than steel-blue lustre—at an early age quite brown, with scarcely any lustre, and the rump and upper tail-coverts skirted with rusty. Frontlet obscurely marked, or reduced to a mere tawny line, and under parts, especially behind the dark collar, very pale, even brownish-white.

IN the case of this Swallow, whose name is a "household word" alike with the learned and the ignorant of ornithology, it is unnecessary to rehearse the items which have formed staples of biography since Wilson wrote truly "that the light of heaven itself, the sky, the trees or any other common objects of Nature, are not better known than the Swallows. We welcome their first appearance with delight, as the faithful harbingers of flowery spring and ruddy summer; and when, after a long, frost-bound, and boisterous winter, we hear it announced, that 'the Swallows are come,' what a train of charming ideas are associated with the simple tidings!" But almost all the written history of the bird has the savor of home; we think of Swallows and the city street, the farm-yard, the bursting barn, the new-mown hay, the flocks and herds, and all the changes of the seasons that come to us when comfortably housed—forgetting, perhaps, the trackless waste of the West, where Swallows are still as wild and primitive as any birds, bounden by no human ties, and no associates of civilization. Let us see the Swallow as he was before there were houses in this country—as he still remains in some parts of the world: we shall find him living in caverns, like the primitive cave-dwellers of our race; in holes in the ground like the foxes of Scripture; in hollow trees, like the hamadryads of mythology —so lowly is the habitation of this winged messenger of the changeful seasons. And yet, no sooner does the sound of the woodsman's axe in the clearing foretell the new day, than the twitter of the Swallow responds like an echo, and the glad bird hastens to fold his wings beneath a sheltering roof.

Along the parallel of 49° I occasionally observed Barn Swallows at various places from the Red River of the North to the Rocky Mountains, during July and August of 1873–74. Excepting at Pembina, Dakota, where, however, I do not think that any of these Swallows were breeding among the numbers of Eave and White-bellied that I saw during my visit, there were no human habitations for the birds to occupy; and as eligible breeding-places were few and far between, Barn Swallows were comparatively rare. A small colony which had settled along a stream near the Sweetgrass Hills, gave the opportunity of observing one of the many modifications of their breeding habits. Here the nests were built on the ground, in little holes and crevasses in the perpendicular face of a cut-bank. I could not satisfy

myself that the holes were dug by the birds, though my assistant thought so; but they were probably refitted for the reception of the nests.

In New Mexico, I once saw large numbers of Barn Swallows near Albuquerque, on the Rio Grande; and at Los Pinos, a little further along the same mighty river, these ubiquitous birds were breeding about the town, in close association with the gay and familiar little Burions (*Carpodacus frontalis*). The adobe buildings furnished both these birds with inviting homesteads, and there was a good deal of argument at times between them, going to prove that no house is large enough for two families. I never saw Barn Swallows at Fort Whipple, where were plenty of White-bellies and Violet-greens and Purple Martins among the pineries; but those were days in the infancy of the Territory, and things may have since changed. Dr. Cooper relates that he saw many Barn Swallows migrating past Fort Mojave on the Colorado River in May, 1861; and he observed their arrival at San Diego and Santa Cruz, California, late in March. He remarks that in this State they frequent the sea-coast rather than inland localities, probably for their well-known delight in skimming the surface for insects; and that in wild districts they build in caves, which abound along the sea-shore from San Diego to the Columbia River. Henshaw speaks of the very general distribution of the species in the Middle Province. Ridgway found it most abundant about Pyramid Lake, Nevada, where it nested among the tufa-domes, each nest being attached to the ceiling of a cave among the rocks, and each cave having generally but a single pair. He also found nests in caverns of the limestone cliffs on the eastern side of the Ruby Mountains; and others elsewhere, attached as usual in the East to rafters of buildings. These "tufa-domes", as described by the same writer, are rocks of remarkable form and structure, usually having rounded or domed tops, being thickly incrusted with calcareous tufa, and honey-combed beneath with winding passages and deep grottoes, in which various birds nested, such as the Burion, Say's Pewee, and the Barn Swallow. Various other advices we have from the West, particulary from the Pacific coast, attest that this Swallow is primitively a troglodyte, or cave-dweller; and even in the East we have similar evidence in the "Swallow Cave" at Nahant, which Dr. Brewer mentions as once a favorite resort. In thus rehearsing the nestings of the Barn Swallow,

aside from its now habitual choice of rafters, I may finally note that it sometimes takes forcible possession of the nests of other species, for Mr. Allen has known a pair to turn Cliff Swallows out of doors, and occupy the premises.

I suppose I hardly need describe the nest itself—an object as familiar to most persons as a cobweb or a pitch-fork,—an untidy mass of raw material, fresh from the bosom of mother earth, with "hay-seed in the hair", and a smell of the stable, like the typical Granger himself. These nests are composed ordinarily of little pellets of mud stuck together in layers, with hay intervening; for these birds have never learned, it seems, to make "bricks without straw", like their more ingenious cousins of the eaves. Outside, the hay hangs unkempt; inside these stout adobe walls, there is a good soft stuffing of fine grasses, and a thick warm bed of feathers. The nests vary endlessly in size, shape, and degree of finish, according to the character of the site selected, the kind of materials most available, the facility of gathering them, and doubtless also the stress of impregnation under which the female may be laboring.

One point about this Swallow's nest-building, however, may not be generally known. I give it in the words of my respected friend Dr. Brewer, with whose life-long observation of our birds I have too frequent occasion to differ:—"A striking peculiarity of these nests is frequently an extra platform built against, but distinct from the nest itself, designed as a roosting-place for the parents, used by one during incubation at night or when not engaged in procuring food, and by both when the young are large enough to occupy the whole nest. One of these I found to be a separate structure from the nest, but of similar materials, three inches in length and one and a half in breadth. The nest had been for several years occupied by the same pair, though none of their offspring ever returned to the same roof to breed in their turn. Yet in some instances as many as fifty pairs have been known to occupy the rafters of the same barn."

Under ordinary circumstances, these Swallows raise more than one brood each year, and usually four, five, or six are a nestful. Notwithstanding the notorious regularity of their migration, their breeding is rather an arbitrary matter, and it is not uncommon to find at the same time nests containing fresh eggs and others with fledglings. At this season, the activity of the parents is at its maximum, and their energy is

taxed to supply voracious throats with insects captured on tireless wing. The rate of speed in flying, the distances traversed in a given period, and the numbers of insects destroyed, have all been the subjects of some curious calculations,—or rather speculations, for these matters scarcely admit of mathematics. Wilson supposed a Swallow to fly about a mile a minute, for ten hours a day, for ten years,—equivalent to more than eighty-seven times around the world! However this may be, let us trust that these matchless wings may bring the Swallows again next year, as they have this; and let us look leniently, even encouragingly, upon the various superstitions of folk-lore, which tend to protect and foster these amiable, these charming and useful creatures—even though we may not fear that to kill them is to make the cows give bloody milk!

Genus TACHYCINETA Cab.

Hirundo, p., of authors.
Chelidon, *Boie*, Isis, 1826, *nec* 1822 (originally applied to *H. urbica*).
Tachycineta, *Cab.* Mus. Hein. i. 1850, 48 (type *H. thalassina*).

This group was established in 1850 by Cabanis upon *H. thalassina* of Swainson, and is now commonly allowed to include *H. bicolor*. These species agree closely with each other, both in form and pattern of coloration, and differ from *Hirundo* proper chiefly in lacking the disproportionate length, attenuation and forfication of the tail, this member being much shorter than the wings, and simply emarginate or with shallow fork. All the species are entirely white below, and the extralimital ones, of which there are several, have the rump white. The eggs of our species are pure white, unmarked. *H. thalassina* stands alone in the soft velvety plumage of the upper parts, without metallic gloss, and much variegated in color. The other species, including *T. bicolor*, have more compact, silky plumage, with rich metallic sheen. A difference was noticed by Cabanis, who speaks of *T. bicolor* „als 2te, jedoch vom Typus mehrfach abweichende Art.“ None of the many generic names bestowed of late upon Swallows have been based upon *T. bicolor*, which seems at least as worthy as some others to stand as type of a subgenus (IRIDOPROCNE). This includes, besides *I. bicolor*, the extralimital species *I. albiventris*, *I meyeni*, *I. leucorrhoa*, *I. albilinea*, and probably some others. The whole group is confined to America. Both of the North American species occur in the Colorado Basin.

White-bellied Swallow

Tachycineta bicolor

Hirundo bicolor, *V.* OAS. i. 1807, 61, pl. 31.—*Steph.* Gen. Zool. x. 1817, 105.—*V.* Ency. Méth. ii. 1823, 520 —*Bp.* Journ. Phila. Acad. iv. 1825, 257.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 65.—*Aud.* OB. i. 1831, 491, pl. 98.—*Sw. & Rich.* FBA. ii. 1831, 328.—*Nutt.* Man. i. 1832, 605.—*Peab.* Rep. Orn. Mass. 1839, 346.—*Towns.* Journ. Phila. Acad. viii. 1839, 155.—*Aud.* Syn. 1839, 35.—*Aud.* BA. i. 1840, 175, pl. 46.—*Giraud,* BLI. 1844, 36.—*Lembeye,* Av. Cuba, 1850, 46.—*Cabot,* Naum. ii. Heft iii. 1853, 65 (Lake Superior).—*Wolley,* Zoologist, xi. 1853, 3806 (Derby, England).—*Thomps.* Vermont, 1853, 98.—*Woodh.* Rep. Zuñi and Colo. R. 1853, 65.—*Read,* Pr. Phila. Acad. 1853, 401.—*Hoy,* Pr. Phila. Acad. 1853, 308.—*Kennic* Tr. Illinois Agric. Soc. i. 1855, 581.—*Pratten,* ibid. 600.—*Cass.* Illust. B. Cal. and Tex. 1855, 244.—*Henry,* Pr. Phila. Acad. 1855, 308 (New Mexico).—*Haym.* Pr. Phila. Acad. 1856, 288 —*Putn.* Pr. Ess. Inst. i. 1856, 205.—*Bry.* Pr. Bost. Soc. vi. 1857, 115 (Nova Scotia).—*Brew.* Pr. Bost. Soc. vi. 1857, 148 (California).—*Kneel.* Pr. Bost. Soc. vi. 1857, 233.—*Brew.* N. A. Ool. 1857, 100, pl. 4 (egg).—*Newb.* PRRR. vi. 1857, 78.—*Wolley,* Zoologist, 1858, 3806.—*Maxim.* J. f. O. 1858, 102.—*Bd.* BNA. 1858, 310.—*Xant.* Pr. Phila. Acad. 1859, 191 (California).—*Henry,* Pr. Phila. Acad. 1859, 106 (New Mexico).—*Willis,* Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).—*Bland,* Smiths. Rep. for 1858, 1859, 287 (Bermudas).—*Martens,* J. f. O. 1859, 216 (Bermudas).—*Jones,* "Nat. Bermuda, 34".—*Coop. & Suck.* NHWT. 1860, 185.—*Newton,* Zoologist, xviii. 1860, 7145 (Derby, England).—*Newton,* PZS. 1860, 131 (England).—*Newt.* Ann. Mag. Nat. Hist. 3d ser. vi. 1860, 130 (same).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 364.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 409.—*Verr.* Pr. Ess. Inst. iii. 1862, 148.—*Verr.* Pr. Bost. Soc. ix. 1862, 138 (Anticosti).—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Blak.* Ibis, 1862, 4; 1863, 64 (Saskatchewan).—*Lord,* Pr. Roy. Arty. Inst. iv. 1864, 115 (British Columbia).—*Allen,* Pr. Ess. Inst. iv. 1864, 65.—*Bd.* Rev. AB. 1865, 297.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*McIlwr.* Pr. Ess. Inst. v. 1866, 86 (Canada West).—*Brown,* Ibis, 1868, 420 (Vancouver).—*Coues,* Pr. Bost. Soc. xii. 1868, 111 (South Carolina).—*Dall & Bann.* Tr. Chic. Acad. i. 1869, 279 (Alaska) —*Fowler,* Am. Nat. iii. 1869, 116.—*Coop.* Am. Nat. iii. 1869, 33, 474.—*Coop.* B. Cal. i. 1870, 106.—*Trippe,* Pr. Ess. Inst. vi. 1871, 114.—*Coues,* Pr. Phila. Acad. 1871, 21 (Fort Macon, N. C. January).—*Harting,* Man. Brit. B. 1872, 125 (England).—*Allen,* Bull. MCZ. iii. 1872, 176 (Colorado, up to timber-line).—*Finsch,* Abh. Nat. Ver. Bremen, iii. 1872, 29 (Alaska).—*Snow,* B. Kans. 1873, 5.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235.—*Kirtl.* Pr. Cleveland Acad. i. 1874, 267.—*B. B. & R.* NAB. i. 1874, 344, pl. 16, f. 8.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Hensh.* List. B. Ariz. 1875, 156.

Chelidon bicolor, "*Lesson*".—*Bp.* CGL. 1838, 8.—*Gamb.* Pr. Phila. Acad. iii. 1846, 110.—*Gamb.* Journ. Phila. Acad. i. 1847, 31.—*McCall,* Pr. Phila. Acad. 1851, 215.

Herse bicolor, *Bp.* CA. i. 1850, 341.

Tachycineta bicolor, *Cab.* Mus. Hein. i. 1850, 48.—*Bp.* Compt. Rend. xxxviii. 1854, 651.—*Gundl.* J. f. O. 1856, 4 (Cuba).—*Gundl.* J. f. O. 1861, 330 (Cuba).—*Coues,* Pr. Ess. Inst. v. 1868, 276.—*Sumich.* Mem. Bost. Soc. i. 1869, 547 (Mexico, plateau).—*Allen,* Bull. MCZ. ii. 1871, 269 (Florida, in winter).—*Coues,* Key, 1872, 113.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 369.—*Merr.* Ann. Rep. U. S. Geol. Surv. for 1872, 1873, 713.—*Ridgw.* Am. Nat. viii. 1874, 199.—*Coues,* BNW. 1874, 86.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 11.—*Hensh.* Rep. Orn. Specs. 1874, 42, 76.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 217.—*Gentry,* Life-Hist. 1876, 188.—*Minot* BNE. 1877, 146.—*Ridgw.* Rep. Surv. 40th Par. iv. 1877, 441.

Petrochelidon bicolor, *Scl.* PZS. 1857, 201 (Xalapa); 1859, 364 (Xalapa).—*S. & S.* Ibis, 1859, 13 (Guatemala).—*Brew.* Pr. Bost. Soc. vii. 1860, 306 (Cuba).—*Scl.* Cat. AB. 1862, 40.

Hirundo viridis, *Wils.* AO. v. 1812, 49, pl. 38, f. 3.—*DeWitt Clint.* Ann. Lyc. N. Y. i. 1824, 159.—*Aud.* Ann. Lyc. N. Y. i. 1824, 167.—*Bp.* Journ. Phila. Acad. iv. 1825, 257.—*Bruhin,* Zool. Gart. 1871, 15.

Chelidon viridis, *Boie,* "—, 1826, —".—*Boie,* Isis, 1828, 316.

Hirundo leucogaster, *Steph.* "Gen. Zool. x. 1817, 106" (based on Wilson

Chelidon leucogastra, *Boie,* Isis, 1844, 171.

Hirundo prasina, *Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 58 (quotes "*viridis* Wils.").
Hirondelle bicolore, *V.* l. c.
Black and White Swallow, *Steph.* l. c. (= *bicolor* V.).
Green-blue Swallow, *Steph.* l. c.—*S. & R.* l. c.
Hironde le bicolore *ou* **à ventre blanc,** *Le Moine,* Ois. Canad. 1861, 143.
White-bellied Swallow, *of authors.*

HAB.—Temperate America. In North America, north to Great Slave Lake and Alaska. Breeds indifferently in its United States and British American range and on the highlands of Mexico. Winters abundantly in the southernmost United States, Bermuda, Cuba, Mexico, and south to Central America at least. Accidental in England.

CH. SP.— ♀ ♂ *Viridi-nitens, infrà alba; alis caudâque fusco-nitentibus, loris nigris.*

♂, adult: Entire upper parts lustrous dark green; wings and tail blackish, lustrous; lores black. Entire under parts pure white. Bill black; feet dark. Length about 6 inches; extent, 13; wing, 4¼–5; tail, 2½, slightly forked.

♀: Similar, the colors rather less intense and lustrous.

Young: Birds of the year slowly acquire a plumage differing only in the less lustre and intensity from that of the adults; but, on leaving the nest, they are dark mouse-gray or slate-color above, including the wings and tail, the interscapulars and inner quills tipped with rusty; and white below, slightly shaded with ashy; thus curiously similar to *Cotyle riparia.* The feet yellow. According to Mr. Brewster's observations, the first plumage is worn longer than usual, the autumnal dress being slowly gained—one or two of the metallic-tinted feathers at a time. The quills of the wing are moulted by the young as well as by the adult, and in both, in autumn, the inner secondaries are white-tipped.

SWALLOWS are not seldom seen at sea, being among the birds that most frequently alight on the rigging of vessels, beyond sight of land, to rest and recruit before pushing on their trackless way. The pretty White-bellied Swallow, in dress-suit of snowy vest and literal "swallow-tail"—for have we not such a name for a particular garment?—has been known to accomplish a trans-Atlantic voyage successfully, and reach the shores of the old country only to be captured and made a paragraph of. This shows what he can do when he really tries to fly; his movements over the land are the veriest sauntering in comparison.

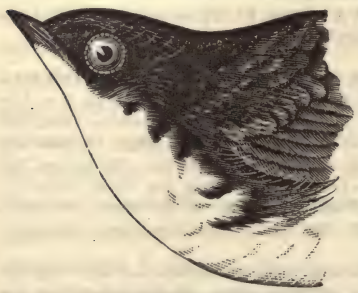

FIG. 47.—White-bellied Swallow, natural size.

The White-belly seems, from another circumstance, to be one of the hardiest of our Swallows; for it is conspicuous among the winter birds of Florida, and doubtless other parts of the Gulf coast. Mr. Boardman tells me, *vivâ voce*, that countless thousands enjoy the serenity of the Floridan winters; and, like the Bluebird, the White-belly is not seldom tempted by the treachery of the "January thaw" to come unguardedly northward, being the species which, perhaps oftener than any other of the family, is noted as occurring unexpectedly beyond its usual range in winter, and thus by no means making a summer. A case of this sort came within my experience at Fort Macon, North Carolina, where numbers of these Swallows appeared one warm day early in January, though there had been a smart freeze just before. The flock played about the fort, but were soon driven off by bad weather; they were next seen again on the 20th of the month, and occasionally from that time until the regular migration. From their winter-homes, not only in the Gulf States and in Southern California, but in Mexico, the West Indies, and Central America, these birds spread northward in March and April, from one side of the continent to the other, and some proceed to the Arctic regions. They breed independently of latitude, some on the highlands of Mexico, and anywhere in the West; but in the East, their usual breeding-range is said to be north of the parallel of 38°. How unexceptionally this may hold I do not know; but these Swallows are especially recognized as summer visitors in northerly parts of the United States, as New England for example, and in the British Provinces.

Unlike the Barn and Eave Swallows, the glossy *viridis* of Wilson is a confirmed hole-breeder, rather jealous of the ancient customs of its family, and slow to yield to the allurements of civilization, even though the most tempting boxes be presented to its choice. When it will, it will, and when it won't, the Purple Martins must be depended on to fill the neat little houses that we build to entice the Swallows. In Eastern Massachusetts, says Dr. Brewer, the change of habit is confirmed. In parts of Maine and New Brunswick, Mr. Boardman tells me, the experiment is far from successful, as, ten to one, Swallows still nest in holes in trees and stumps. The hollow tree is the natural and still the usual resort, as we see clearly from study of these birds in the West.

I do not think that I ever saw *bicolor* in Arizona, where

thalassina is not uncommon. Others, however, have found it in that Territory. Captain Bendire speaks of its breeding about Tucson. In Southern Colorado, Mr. Henshaw found it "not uncommon, though perhaps the rarest of the Swallows". It is rarer in the Missouri region than the other Swallows are, because most of that country, like the rest of the Great Plateau, does not furnish many good breeding-places. In California, Cooper found the Blue-greens on the summit of the Coast Range, replacing the Barn and Cliff Swallows, and saw what he supposed were these birds flying over the Sierra Nevada at an elevation of 9,000 feet. He speaks of their wintering in some parts of the State, and this is confirmed by the observations of Mr. Hepburn, who states a few reside during the winter, being reinforced toward the close of February and growing abundant by the end of March. They are a month later still in British Columbia. I found them breeding at Pembina early in June, with great numbers of Cliff Swallows.

Mr. Ridgway has lately published some interesting observations on White-bellied Swallows, which he found more numerous in certain portions of Nevada than these birds have usually been supposed to be anywhere in the West. They abounded among the cottonwoods of the Lower Truckee River, near Pyramid Lake, in May, and every knot-hole seemed to be possessed by a pair. They were just then building, and used to come daily to the door-yard of the Reservation-house to gather materials. The object selected was usually a feather, but occasionally a scrap of paper, or rag of cloth, or a piece of string was picked up and borne to the nest, such conspicuous prizes being generally the occasion of much twittering contention, as the little laborer struggled off to the nest with his burden. But the birds were not confined to the wooded river-valleys, being equally numerous high up in the Wahsatch Mountains, among the aspens, at an elevation of 8,000 or 9,000 feet. He also found them in the Sacramento Valley, a few feet above sea-level, among the oak-trees on the plains. At Carson City, he observed that their manners had been already modified, for they built their nests under eaves, behind the weather-boarding, or about the porches, and were quite familiar. In making his collections, he observed that when one was brought down, the survivors showed great concern, circling, with plaintive twittering, above their dead or dying comrade.

I find no record of the nestling of this species in caves or

holes in rocks, though *thalassina* sometimes does so. Agreeably to its choice of nesting-site, which renders plastering needless, it uses no mud in building its nest, the fabric being loosely constructed of fine soft hay, with a copious warm lining of feathers. The latter are often so disposed as to curl prettily over the treasure within, like the Acanthus that suggested the Corinthian capital; and the eggs are sometimes almost entirely thus covered. It is attested that the same pair will reoccupy their premises year after year; and Dr. Brewer witnesses that they may come to such familiar terms with persons from whom they are accustomed to receive materials for nest-building, as to watch for him and fly toward him. "A pair which had thus, year after year, received supplies of feathers for their nests from the younger members of the family in whose yard their nest was built, would almost take them from the hands of their providers. This pair sat so close as to permit themselves to be taken from their nest, and when released would at once fly back to their brood."

There are some points in the earlier history of this Swallow that I wish to rehearse here. I may premise, that though the species was named by Wilson *viridis*, it had before been called *bicolor* by Vieillot; but that this even is not the root of the matter; for it was known to Latham and Gmelin as a variety of the European House Martin, *Chelidon urbica* of Boie and late naturalists. Next, this species is said to depart from the insectivorous customs of its family so far as to feed at times principally on the berries of the myrtle (*Myrica cerifera*). The fact is attested by Wilson, and Audubon speaks of *bicolor* as roosting by night on the *cirier*, as the French Louisianians call this plant. Thirdly, in connection with the well-known fact that these Swallows spend the winter in great numbers in Florida and the Gulf States, some items respecting their enormous congregations have been noted. I have already spoken of the vast assemblages of Swallows of various kinds which may be witnessed during the season of migration; the books are full of instances, and it seems that the present species is no whit behind its better-known congeners in this respect. Wilson saw hundreds of White-bellies on the sandy beach of Great Egg Harbor. They "completely covered" the myrtle-bushes of the low islands thereabouts; a man told him he had seen a hundred and two killed at a shot, and we need not pre-

sume that a person would prevaricate, just for two Swallows. In recording his observations made on these birds in Louisiana, in winter, Audubon speaks of "thousands flying in different flocks", but only mentions fourteen killed at a shot. During the winter, he says, many were sheltered in holes about the houses, but the greater number resorted to the lakes, to spend the night among the myrtles. "About sunset," he continues, "they began to flock together, calling to each other for that purpose, and in a short time presented the appearance of clouds moving towards the lakes, or the mouth of the Mississippi, as the weather and wind suited. Their aërial evolutions before they alight, are truly beautiful. They appear at first as if reconnoitering the place; when, suddenly throwing themselves into a vortex of apparent confusion, they descend spirally with astonishing quickness, and very much resemble a *trombe* or water-spout. When within a few feet of the *ciriers*, they disperse in all directions, and settle in a few moments. Their twitterings, and the motion of their wings, are, however, heard during the whole night. . . . The hunters who resort to these places destroy great numbers of them, by knocking them down with light paddles, used in propelling their canoes." In another place, Audubon prints a note from Bachman, who states that on the 16th of October, 1833, in company with Dr. Wilson and Mr. J. W. Audubon, he "saw such an immense quantity of this species of birds that the air was positively darkened. As far as the eye could reach, there were Swallows crowded thickly together, and winging their way southward; there must have been many millions!"

In conclusion of this subject, and to give further idea of the current accounts, I quote (at second-hand) the following passages from Henderson's Honduras, London, 1809, p. 119, though I should add that the writer does not refer to any particular species:—"Myriads of Swallows are also the occasional inhabitants of Honduras. The time of their residence is generally confined to the period of the rains, after which they totally disappear. There is something remarkably curious and deserving of notice in the ascent of these birds. As soon as the dawn appears, they quit their place of rest, which is usually chosen amid the rushes of some watery savannah, and invariably rise to a certain height, in a compact spiral form, and which at a distance often occasions them to be taken for an immense column of smoke. This attained, they are then seen separ-

ately to disperse in search of food, the occupation of their day. To those who may have had an opportunity of observing the phenomenon of a waterspout, the similarity of evolution, in the ascent of these birds, will be thought surprisingly striking. The descent, which regularly takes place at sunset, is conducted in much the same way, but with inconceivable rapidity. And the noise which accompanies this can only be compared to the falling of an immense torrent, or the rushing of a violent gust of wind. Indeed, to an observer, it seems wonderful, that thousands of these birds are not destroyed, in being thus propelled to the earth with such irresistible force." The narrative does not state whether or not it was a good day for Swallows.

The Violet-green Swallow

Tachycineta thalassina

Hirundo thalassinus, *Sw.* Philos. Mag. i. 1827, 366 (Mexico).—*Sw.* Isis, 1834, 783.—*Denny,* PZS. 1847, 38 (wrongly attributed to Cuba and Jamaica).

Hirundo thalassina, *Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193 ("Columbia River").—*Aud.* OB. iv. 1838, 597, pl. 385, f. 4, 5.—*Bp.* CGL. 1838, 9.—*Aud.* Syn. 1839, 36.—*Aud.* BA. i. 1840, 186, pl. 49.—*Woodh.* Rep. Zuñi and Colo. R. 1853, 64.—*Cass.* Illust. B. Cal. and Tex. 1855, 245.—*Henry,* Pr. Phila. Acad. 1855, 308 (New Mexico).—*Brew.* N. A. Oöl. i. 1857, 102 (not the alleged figure!—pl. 5, f. 74).—*Newb.* PRRR. vi. 1857, 78.—*Bd.* BNA. 1858, 311.—*Maxim.* J. f. O. 1858, 101 (Upper Missouri R.).—*Bd.* Pr. Phila. Acad. 1859, 303.—*Xant.* Pr. Phila. Acad. 1859, 191.—*Henry,* Pr. Phila. Acad. 1859, 106.—*Scl.* PZS. 1859, 235.—*Heerm.* PRRR. x. 1859, 36.—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 11.—*Coop. & Suck.* NHWT. 1860, 185.—*Lord,* Pr. Roy. Arty. Inst. Woolwich, iv. 1864, 115 (British Columbia).—*Bd.* Rev. AB. 1865, 299.—*Brew.* Am. Nat. i. 1867, 122 (correction of error in N. A. Oöl.).—*Brown,* Ibis, 1868, 421 (Vancouver).—*Coop.* Am. Nat. iii. 1869, 33.—*Coop.* B. Cal. i. 1870, 107.—*Allen,* Bull. MCZ. iii. 1872, 149 (Colorado, up to 8,000 ft.).—*Allen,* Am. Nat. vi. 1872, 274.—*Coop.* Am. Nat. viii. 1874, 17.—*B. B. & R.* NAB. i. 1874, 347, pl. 16, f. 11.

Hirundo thallassina, *Towns.* Journ. Phila. Acad. viii. 1839, 155.—*Gamb.* Journ. Phila. Acad. i. 1847, 31.—*Gamb.* Pr. Phila. Acad. iii. 1846, 110.

Hurindo thalassina, *Bd.* Ives's Rep. Colorado, 1861, pt. v. 5.

Cecropis thalassina, "*Less.*"

Chelidon thalassina, *Boie,* Isis, 1844, 171.

Herse thalassina, *Bp.* CA. i. 1850, 341.—*Coues,* Ibis, 1865, 159, 163 (N. Mex., Arizona).

Tachycineta thalassina, *Cab.* MH. i. 1850, 48.—*Bp.* Compt. Rend. xxxviii. 1854, 651.—*Coues,* Pr. Phila. Acad. 1866, 72 (Fort Whipple, Arizona).—*Sumich.* Man. Bost. Soc. i. 1869, 547 (Vera Cruz, breeding).—*Coues,* Key, 1872, 113.—*Ridgw.* Bull. Ess. Inst. v. 1873, 181 (Colorado).—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 713.—*Coues,* BNW. 1874, 86.—*Allen,* Pr. Bost. Soc. xvii. 1874, 53 (habits).—*Ridgw.* Am. Nat. viii. 1874, 199.—*Nels.* Pr. Bost. Soc. xvii. 1875, 339, 343 (Utah).—*Ridgw.* Rep. Surv. 40th Par. iv. 1877, 443.

Tachycineta thalassina, *Merr.* Ann. Rep. U. S. Geol. Surv. for 1872, 1873, 676.

Petrochelidon thalassina, *S. & S.* Ibis, 1859, 13 (Guatemala).—*Scl.* PZS. 1864, 173 (City of Mexico).

Violet-green Swallow, *of Authors.*

HAB.—Middle and Western Provinces of the United States and adjoining portions of British America. Eastward to the Upper Missouri. South

through Mexico to Guatemala at least. Breeds in its United States and British American range and in higher portions of Mexico. Winters beyond the United States.

CH. SP.—♂ ♀ *Violaceo-viridis, pileo magis purpurescente, torque cervicali et tectricibus caudalibus superioribus purpureo-violaceis; alis caudâque violaceo-fuscis; infrà sericeo-alba.*

♂, adult: Entire under parts, including the sides of the head to just above the eyes, and an enlarged fluffy tuft on the flanks tending to join its fellow over the rump, pure silky white. Upper parts rich, soft, velvety-green, mixed with a little violet-purple; the crown of the head similar, but rather greenish-brown, with a purplish tinge. Cervical region, in some cases a well-defined though narrow cervical collar, and the upper tail-coverts violet-purple. These rich colors without gloss or sheen; wings and tail blackish, with violet and purplish gloss. Bill black; feet brownish-black, small; iris brown; mouth pale yellow. Length, 4½–5 inches; extent, 11½–12¼; wing, 4½; tail, 2, lightly forked; bill, ½; tarsus, ⅝.

The ♀, and immature birds in general, differ simply in the less purity and intensity of the colors of the upper parts. In the very highest plumaged specimens, the back is nearly pure green, the cervical collar distinct, and the several contrasts of crown, collar, back, and upper tail-coverts are strong; in general, the back has a brownish-purple shade, more like that of the crown.

Very young birds, just from the nest, are exactly like those of *T. bicolor*, though smaller, being dark mouse-gray above and white below. But traces at least of the special tints speedily appear. Young or perhaps autumnal birds usually have the inner secondaries white-tipped, as in *T. bicolor*.

MR. BULLOCK appears to have discovered this bird in Mexico prior to 1827, when Swainson published a synopsis of the collection made by the Bullocks, sr. and jr., in the Philosophical Magazine—an article famous for the number of its new genera and species, among them many now well known, the Swainsonian names of which are very familiar to us. Among the genera are *Setophaga*, *Seiurus*, *Sialia*, *Sylvicola*, *Ammodramus*, *Chondestes*, *Dolichonyx*, *Agelæus* (originally written *Agelaus*), *Guiraca*. For all these new genera, and others (none being here characterized), reference is made to the then still unpublished no. 10 of vol. iii. of the Zoological Journal, April–Sept., 1827, and the latter is generally cited as the source of the names; but this article in the Phil. Mag. has actual priority by a short time. The real student of ornithology will find it necessary, sooner or later, to consult this paper, and I advise all who have not done so to lay hands on the book, instead of stealing their quotations from Bd. BNA., as most have done for twenty years.

Who may have been the first to find it in the United States I do not know; but Townsend and Nuttall furnished the whole of Audubon's account, published in 1838, about the time Townsend communicated his discoveries to the Philadelphia Academy, as recorded in their "Journal" for 1837 and 1839. These writers both speak of finding it on some tributaries of the Colorado River, and the first named says that it builds a nest of mud and hay on clay bluffs, and lays four eggs, "of a dark clay colour, with a few spots of reddish-brown"; and adds that on the Columbia River it breeds in hollow trees. The latter statement is correct; in making the former, Townsend seems to have got the species mixed with the Cliff Swallow. Nuttall says that they appeared to occupy nests of the Cliff Swallow, instead of building for themselves, and supposes them to sometimes breed in trees. Audubon supplied Dr. Brewer with a drawing of an egg of this species, got by Nuttall in Oregon, which Dr. Brewer says was the first knowledge he acquired of the "markings" of the egg. The error about the egg and nidification flourished beyond 1857, when Dr. Brewer elaborated it with care, describing and figuring the speckled egg of the Cliff or Barn Swallow as that of the Violet-green, and discrediting Nuttall's observation respecting the probable nesting of the species in trees. The fact is, that the Violet-green Swallow nests in holes in trees and elsewhere, and lays a pure white egg, exactly like *T. bicolor*.

Meanwhile, in 1846–47, Dr. William Gambel published the species from his observations in California; and in 1853 Dr. S. W. Woodhouse spoke of it as abundant in New Mexico. Then came the period of the observers of the Pacific Railroad and Mexican Boundary Surveys, who severally added to the history of the bird, and enabled Professor Baird to place it on the well-known footing of 1858. Drs. A. L. Heermann and T. C. Henry found it at Fort Thorne on the Rio Grande—the former also at Tejon Pass in California. Drs. Cooper and Suckley noted its arrival at Puget Sound early in May, about the 10th, and observed its building in knot-holes of trees, especially oaks, and in deserted woodpeckers' holes. Shortly afterward, Dr. Hayden collected many specimens in the Wind River Mountains, in the present Territory of Wyoming, furnishing one of the most northeasterly records we possess—for some writers of repute, who say that the bird "has been found as

far east as Nebraska", may be reminded that the Territories of Dakota, Montana, Idaho, and Wyoming, and some others, have since been formed at the expense of what was once "Nebraska" and "Oregon". In an article printed in 1864, Mr. J. K. Lord detailed some observations of his made a few years before along the parallel of 49° N. from the Rocky Mountains west. These birds were among the earliest visitors at Colville, arriving in small flocks in March, increasing in May, and building in June in holes in trees, laying four or five eggs. This writer surmised that the birds dug these holes for themselves in soft wood; but this seems scarcely credible, though it is not unlikely that they may do more or less refitting of knot-holes and woodpeckers' nests. The Violet-green Swallow has been observed little, if any, north of the scene of Mr. Lord's operations, and the very border of British America must, for the present at least, be considered its limit of distribution in this direction. The Great Plains seem to present an impassable barrier to the eastward dispersion of even so excellent a flyer as this; but it does come a little beyond even the foothills of the Rockies. Thus, on the 26th of June, 1874, being then on the Upper Missouri, above the mouth of the Yellowstone, near the Quaking Ash River, I observed a few individuals; though no specimens were secured to attest the fact, I could not have been mistaken, as I had long been familiar with the lovely birds from my studies in New Mexico and Arizona.

In general terms, as far as the United States is concerned, the Violet-green inhabits wooded regions from the Rocky Mountains to the Pacific, spreading over all our territory during March; it is liable to be found breeding wherever suitable trees occur, but, like other Swallows, is more or less locally distributed. During September it retires southward, probably none wintering amongst us. It is resident in Mexico, as Mr. Sumichrast informs us, at almost all elevations, and is very common. Mr. Salvin witnesses its abundance in Guatemala during a portion of the year.

I am uncertain to whom we owe the discovery of the fact that the eggs of the Violet-green Swallow are white and unmarked. The information was long delayed in coming, partly owing, no doubt, to the difficulty of getting at the eggs, even when the artfully-hidden retreat is discovered. The nest may be in honey-combed rocks, entirely out of reach; or in the top of a blasted tree, too rotten to be scaled with safety; or out of

reach in a knot hole in strong sound wood. After they were found out, and the hole-breeding character of the species was established, it was natural that the subsequent accounts of cliff and rock nests should be received with caution or mistrust; and so much has been said one way and an other, that it will tend to put the history of the species in the best light to review the testimony on the subject.

When in New Mexico, in 1864, I found the Violet-green Swallows to be very common in the Raton Mountains. This was in June, and I have no doubt that the birds were then nesting, though I had no chance of observing them closely. I noticed their close resemblance to White-bellied Swallows in general appearance, and particularly in mode of flight; and I observed, then as subsequently, the curiously misleading circumstance that the birds appeared to have white rumps. In fact, as is well known, the rump is like the rest of the upper parts in color, but the fluffy white feathers of the flanks lie over the part during flight, sometimes meeting over the root of the tail, thus causing the appearance oberved. This appearance of tricoloration—violet, green, and white—is striking. The following year, at Fort Whipple, in Arizona, I made quite a study of these birds, whose exquisite beauty could hardly fail to touch even the most insensible observer. They nestled in considerable numbers in the pine woods about the fort, usually preferring the edges of the timber, and constructed their nests of hay and feathers in the natural cavities of trees, or in old woodpecker-holes. Sometimes isolated pairs occupied the deciduous trees in the vicinity, as the cottonwoods along the creek and the oaks of the open hillsides; but most of the birds gathered in little colonies in clumps of pine-trees. The birds reached this elevated locality the second or third week in March, and remained until late in September. I considered them the commonest of their tribe, quite characteristic, in fact, of the Arizona pine-belt.

In Utah, Arizona, and New Mexico, agrees Mr. Henshaw, this Swallow inhabits the higher regions, abundantly in all suitable localities, preferring the open spaces or edges of the pineries and groves of oaks, where it breeds in old woodpecker-holes. In Southern Colorado, he found it in large colonies at the great altitude of 10,000 feet, early in June, when these ambitious little beauties were preparing to nest on high pine-stubs. In the same Territory, Allen met with them at cor-

responding altitudes, generally nesting in the wonted woodpecker-holes, but sometimes also in holes in rocks, in company with White-throated Swifts. Ridgway has given us our best accounts of this rock-building, which I have myself never witnessed. The birds, he says, were abundant during May at Pyramid Lake, Nevada, where they were observed to enter the fissures of the calcareous tufa cliffs, where they doubtless had nests. In July he saw them again in the limestone cañons of the Ruby Mountains, associated with Cliff Swallows and the Swifts just mentioned. Here their nests were in horizontal fissures of the rock, and mostly inaccessibe. Two, however, were in places admitting the hand; and these were found to be masses of sticks and straws, lined with feathers. One of these contained five eggs; the other, three broken eggs and the dead parent. The writer continues with a pertinent remark on the general subject:—"Although other observers, whose statements we do not in the least doubt, have described the habits of this bird as arboreal, like those of the White-bellied Swallow (*T. bicolor*) and the Purple Martin, we never found it so in any locality during our trip, it being everywhere a strictly Saxicoline species, and an associate of *Panyptila saxatilis*, *Petrochelidon lunifrons*, and *Hirundo horreorum* rather than of the species named, and to be found only where precipitous rocks, affording suitable fissures, occurred."

This is enough to settle the question we asked each other for some years, Where *does* the Violet-green breed? We have here simply a *hole-breeder*, indifferent whether the cavity it occupies be tree or rock; and we need not be surprised to learn any day that it has been found nestling in a bank of earth, in a natural excavation, or even in a Kingfisher's or Bank or Rough-winged Swallow's hole. One thing, however: it has never learned the plasterer's trade, at which the Cliff and Barn Swallows are such clever artisans; and yet it has been stated by me, in the "Birds of the Northwest", p. 88, on the authority of Mr. T. M. Trippe, to have been found "*nesting under the eaves of houses*, like the Cliff Swallow", the fact being adduced to show that, like most others of its tribe, this bird had at length paid its compliments to human civilization. The details of the circumstance had not been communicated to me in 1874; but Mr. Trippe yesterday (March 17, 1878) visited my study, and we had some conversation on the subject. He described the nests, in which Violet-green Swallows certainly had their

eggs, as bulky structures of mud, and like those of Cliff Swallows. Being perfectly familiar with the birds, he could not have been mistaken in identifying the species; and he agreed with me that the birds must have occupied in these instances the deserted nests of other Swallows. This brings up Nuttall's early testimony to the same effect, and makes it seem much more probable—if it may not indeed be regarded as confirmatory—though he or Townsend certainly got hold of the wrong egg, a drawing of which subsequently came into Dr. Brewer's possession through Audubon. We should expect the Violet-greens, on yielding to civilization, to come to terms in the same way the Martins and White-bellies have, by occupying boxes set up for their use, or else to enter knot-holes or the crevices behind weatherboards, as the Wrens; but that their habits will be modified in some way, and at no distant day, there is no reasonable doubt. With which understanding, I leave the wilful and capricious little creatures to enjoy their hermitages, whether of tree or rock, as long as they please.

Genus PETROCHELIDON Cabanis

Hirundo, p., *of Authors.*
Petrochelidon, *Cab.* MH. i. 1850, 47 (type *H. melanogaster* Sw. = *P. swainsoni* Scl.).

This is one of the better-marked groups which have been established as generically distinct from *Hirundo*. In some respects, it rather approaches *Progne*. The bill is quite stout and deep (for this family), and the nostrils are superior, opening without nasal scale. The tail is unusually short, the tips of the folded wings reaching beyond it, and is about even, or only slightly emarginate, with the feathers broad to their ends. The feet are much as in *Hirundo;* the tarsi are feathered above, and the toes are extensively adherent at base. There is a certain bristly appearance of the front and chin, different from what is seen in other groups. The tuft of crissal feathers is full, reaching nearly to the end of the tail. The species agree well in a special pattern of coloration, being steel-blue above, with rufous rump and nuchal band, and usually a frontlet of different color from the rest of the upper parts; the under parts are not continuously white, as in *Tachycineta*. The nidification of some, if not all, of the species, is peculiar. The eggs are colored, as in *Hirundo*.

The species are characteristically American, though one has been described from the Cape of Good Hope. An Australian species referred to *Petrochelidon* by Cabanis is by Gray ranged

in the different genus *Hylochelidon* Gould. Several species of true *Petrochelidon* occur in Central and South America and the West Indies, the actual number being in question. Pending satisfactory answer, I continue to present our Cliff or Eave Swallow, *lunifrons* of Say, as distinct from the West Indian *fulva* of Vieillot, though not quite satisfied of specific distinction in this case; but I have little hesitation in assigning the Mexican *P. swainsoni* Scl. (= *melanogaster* Sw.) as a synonym. *P. pœciloma* of Jamaica and *P. ruficollaris* of Peru are closely related.

The Eave, Cliff, or Crescent Swallow

Petrochelidon lunifrons*

Hirundo, 35, *Forst.* Philos. Trans. lxii. 1772, 408 (Severn River).

Hirundo lunifrons, *Say*, "Long's Exped. R. Mts. ii. 1823, 47".—*Sw. & Rich.* FBA. ii. 1831, 331.—*Brew.* Pr. Bost. Soc. 1852, 270 (habits).—*Woodh.* Rep. Zuñi & Colo. R. 1853, 64.—*Cass.* Illust. B. Cal. and Tex. 1855, 243.—*Haym.* Pr. Phila. Acad. 1856, 287 (Indiana).—*Brew.* Pr. Bost. Soc. vi. 1857, 148.—*Brew.* N. A. Oöl. 1857, 94, pl. 5, f.. 68–73.—*Newb.* PRRR. vi. 1857, 78.—*Bd.* BNA. 1858, 309.—*Xant.* Pr. Phila. Acad. 1859, 191 (California).—*Henry*, Pr. Phila. Acad. 1859, 106 (New Mexico).—*Coop. & Suck.* NHWT. 1860, 124.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 374.—*Barn.* Smiths. Rep. for 1860, 1861, 436 (Pennsylvania).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 409.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 161.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125 (Maine).—*Verr.* Pr. Bost. Soc. ix. 1862, 137 (Anticosti).—*Verr.* Pr. Ess. Inst. iii. 1862, 148 (Maine).—*Verr.* Pr. Bost. Soc. ix. 1863, 276 (on the migrations, &c.).—*Blak.* Ibis, 1863, 64 (Saskatchewan).—*Lord*, Pr. Roy. Arty. Inst. Woolwich, iv. 1864, 116 (British Columbia).—*Allen*, Pr. Ess. Inst. iv. 1864, 65.—*Coues*, Ibis, 1865, 159, 163 (New Mexico and Arizona).—*Dress.* Ibis, 1865, 479 (Texas).—*Coues*, Ibis, 1866, 263 (Colorado River).—*McIlwr.* Pr. Ess. Inst. v. 1866, 86 (Canada West).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*Layard*, Birds of South Africa, 1867, 55 (Africa! spec. identified by Hartlaub).—*Brew.* Am. Nat. i. 1867, 122.—*Haym.* Cox's Geol. Surv. Indiana, 1869, 218 (abundant since 1849).—*Coop.* Am. Nat. iii. 1869, 33 (Missouri River, "in swarms").—*Turnb.* B. E. Pa. 1869, 19; Phila. ed. 12.—*Dall & Bann.* Tr. Chic. Acad. i. 1869, 279 (Alaska).—*Coop.* B. Cal. i. 1870, 104.—*Stev.* Ann. Rep. U. S. Geol. Surv. for 1870, 1871, 463.—*Coop.* Am. Nat. iv. 1871, 758.—*Woodh.* Am. Nat. vi. 1872, 173 (albino).—*Allen*, Am. Nat. vi. 1872, 274.—*Allen*, Bull. MCZ. iii. 1872, 176 (Colorado, up to timber-line).—*Scott*, Pr. Bost. Soc. xv. 1872, 223.—*Trippe*, Pr. Bost. Soc. xv. 1873, 235.—*Herrick*, Bull. Ess. Inst. v. 1873, — (Grand Menan).—*Snow*, B. Kans. 1873, 5.—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 706.—*Coop.* Am. Nat. viii. 1874, 17.—*Coues*, Am. Nat. viii. 1874, 599.—*Kirtl.* Pr. Cleveland Acad. 1874, 268 (Ohio).

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* Some references to the "fulva" of the West Indies, a form scarcely if at all different, are as follows :—

Hirundo fulva, *Vieill.* "OAS. i. 1807, 62, pl. 32" (San Domingo).—*V.* N. D. d'H. N. xiv. 1817, 521.—*V.* EM. ii. 1823, 527, n. 37.—*Steph.* Gen. Zool. x. 1817, 126.—*Thienem.* J. f. O. 1857, 149 (Cuba; egg).—*Gieb.* Vög. 1860, 74, f. 126 (in part).—*? March*, Pr. Phila. Acad. 1863, 295 (Jamaica).—*Bry.* Pr. Bost. Soc. x. 1866, 222 (Porto Rico).

Cecropis fulva, *Boie*, Isis, 1844, 175.

Petrochelidon fulva, *Cab.* MH. i. 1850, 47.—*Gundl.* J. f. O. 1856, 3 (Cuba).—*Brew.* Pr. Bost. Soc. vii. 1860, 306 (Cuba).—*Gundl.* J. f. O. 1861, 328 (Cuba).—*? Scl.* Cat. AB. 1861, 40 (Jamaica).—*? Scl.* PZS. 1861, 72.—*Bd.* Rev. AB. 1865, 291 (Cuba).

? Hirundo pœciloma, *Gosse*, B. Jam. 1847, 64.

? Petrochelidon pœciloma, *Bd.* Rev. AB. 1864, 292.

Cecropis lunifrons, *Boie*, Isis, 1828, 315; 1844, 175.

Petrochelidon lunifrons, —?—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 317 (New Grenada).—*S.l.* Cat. AB. 1862, 40.—*Bd.* Rev. AB. 1865, 288.—*Coues*, Pr. Phila. Acad. 1866, 72 (Arizona) —*Coues*, Pr. Ess. Inst. v. 1868, 276 (New England).—*Coues*, Key, 1872, 114.—*Trippe*, Am. Nat. vi. 1872, 48.—*Aiken & Holden*, Pr. Bost. Soc. xv. 1872, 197.—*Maym.* Pr. Bost. Soc. xiv. 1872, 369 (New England).—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 676, 713.—*Coues*, BNW. 1874, 88.—*Ridgw.* Am. Nat. viii. 1874, 200.—*B. B. & R.* NAB. i. 1874, 334, pl. 16, f. 13.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Nels.* Pr. Bost. Soc. xvii. 1875, 339 (Utah).—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 11.—*Hensh.* List B. Aniz. 1875, 156.—*Hensh.* Zeol. Expl. W. 100 Merid. 1875, 215.—*Hensh.* Rep. Orn. Specs. 1874, 42, 60, 75, 104.—*Gentry*, Life-Hist. 1876, 190.—*Minot*, BNE. 1877, 144.—*McCauley*, Bull. U. S. Geol. Surv. iii. n. 3, 1877, 662 (Texas).—*Ridgw.* Rep. Surv. 40th Par. iv. 1877, 440.

Hirundo opifex, *De Witt Clint.* Ann. Lyc. N. Y. i. 1824, 161.

Hirundo respublicana, *Aud.* Ann. Lyc. N. Y. i. 1824, 164.

Hirundo fulva, *De Witt Clint.* Ann. Lyc. N. Y. i. 1824, 156.—*Bp.* AO. i. 1825, 63, pl. 7, f. 1.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 64.—*Less.* Tr. Orn. 1831, 270.—*Aud.* OB. i. 1831, 353, pl. 58.—*Nutt.* Man. i. 1832, 603.—*Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193 (Columbia River).—*Bp.* CGL. 1838, 9.—*Peab.* Rep. Orn. Mass. 1839, 345 —*Towns.* Journ. Phila. Acad. viii. 1839, 155.—*Aud.* BA. i. 1840, 177, pl. 47.—*Giraud*, BLI. 1844, 38.—*Gamb.* Pr. Phila. Acad. iii. 1846, 110 (California).—*Denny*, PZS. 1847, 37.—*Thomps.* Vermont, 1853, 97.—*Hoy*, Pr. Phila. Acad. 1853, 307.—*Read*, Pr. Phila. Acad. 1853, 401.—*Henry*, Pr. Phila. Acad. 1855, 308 (New Mexico).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 581.—*Pratten*, ibid. 600.—*Putn.* Pr. Ess. Inst. i. 1856, 205.—*Maxim.* J. f. O. 1858, 100.—*Heerm.* PRRR. x. 1859, 36.

Hirundo fulvus, *Willis*, Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).

Herse fulva, *Bp.* CA. i. 1850, 341 (in part at least).

Petrochelidon fulva, *Bp.* Compt. Rend. xxxviii. 1854, 650 (in part at least).

Hirundo melanogaster, *Sw.* Philos. Mag. i. 1827, 366; Isis, 1834, 783 (name inept).

Petrochelidon melanogastra, *Cab.* MH. i. 1850, 47.

Hirundo swainsoni, *S.l.* PZS. 1858, 296 (Oaxaca); 1859, 376 (Oaxaca. Mere change of name from *melanogaster*).—*Bd.* Rev. AB. 1865, 290.—*Salv.* Ibis, 1866, 192 (Guatemala).

Petrochelidon swainsonii, *Scl.* Cat. AB. 1862, 40.

Petrochelidon swainsoni, *Lawr.* Bull. Nat. Mus. n. 4, 1876, 17 (Tehuantepec).

Hirundo coronata, *Licht.* "Mus. Berol."

White-fronted Swallow, *Sw. & Rich.* l. c.

Republican *or* **Cliff Swallow,** *Aud.* l. c.

Rocky Mountain Swallow, *Hazard*, Pr. Phila. Acad. 1851, 141 (habits).

Cliff Swallow, Eave Swallow, *Authors.*

HAB.—North America, at large, breeding in suitable localities. North to Severn River (*Forster*, 1772) and the Arctic Ocean; northeast to Nova Scotia (*Vieillot*, 1823); northwest to the Yukon. Wrongly supposed to have lately migrated into the Eastern United States. South through Mexico to Panama at least (resident Mexican birds = *swainsoni*). ?Not West Indies (=*fulva* Vieillot).

CH. SP.—♂ ♀ *Dorso, pileo, et maculâ gulari chalybeis; fronte albicante; gula, lateribus capitis, tectricibus caudalibus superioribus rufis; infrà brunneo-grisea, abdomine albicante.*

♂ ♀, adult: Back and top of head, with a spot on the throat, deep lustrous steel-blue, that of the crown and back separated by a grayish nuchal collar. Frontlet white or brownish-white. Shorter upper tail-coverts rufous. Chin, throat, and sides of head intense rufous, sometimes purplish-chestnut, prolonged around the side of the nape. Under parts dull grayish-brown, with usually a rufous tinge (rusty-gray), and dusky shaft-lines,

whitening on the belly, the under tail-coverts gray, whitish-edged and tinged with rufous. Wings and tail blackish, with slight gloss. Bill black; feet brown. Length, 5–5½; extent, 12 or more; wing, 4¼–4½; tail, 2½, nearly square.

The sexes are not distinguishable. Both vary much in the tone of coloration, especially of the rufous parts, though the pattern is much the same. The forehead is sometimes white, sometimes quite brown. In young birds, the frontlet may be altogether wanting; the upper parts are lustreless dark brown, most of the feathers being skirted with whitish; the rufous of the throat and rump a mere tinge, the spot on the throat wanting, and the parts often speckled with white.

DISCOVERY of this notable Swallow, commonly attributed to Say, was made long before Long's expedition to the Rocky Mountains, though the species was first named in the book which treats of that interesting journey. The bird may have been discovered by the celebrated John Reinhold Forster; at any rate, the earliest note I have in hand respecting the Cliff Swallow is Forster's, dating 1772, when this naturalist published in the *Philosophical Transactions* "An Account of the Birds sent from Hudson's Bay; with Observations relative to their Natural History; and Latin Descriptions of some of the most uncommon"—a rather noted paper, in which seven new species, viz, *Falco spadiceus*, *Strix nebulosa*, *Emberiza* [*i. e. Zonotrichia*] *leucophrys*, *Fringilla* [*i. e. Junco*] *hudsonias*, *Muscicapa* [*i. e. Dendrœca*] *striata*, *Parus hudsonicus*, and *Scolopax* [*i. e. Numenias*] *borealis*, are described, with references to various other new birds by number, such as "*Turdus* no. 22", which is *Scolecophagus ferrugineus*, and "*Hirundo* no. 35", which is *Petrochelidon lunifrons*. The next observer—in fact, a rediscoverer—was, perhaps, Audubon, who says that he saw Republican or Cliff Swallows for the first time in 1815 at Henderson, on the Ohio; that he drew up a description at the time, naming the species *Hirundo republicana* [*sic*]; and that he again saw the same bird in 1819 at Newport, Ky., where they usually appeared about the 10th of April, and had that year finished about fifty nests by the 20th of the same month. The next year, namely, 1820, Major Long and Sir John Franklin found these birds again, in widely remote regions,—the first named during his expedition to the Rocky Mountains, and the latter on the journey from Cumberland House to Fort Enterprise, and on the banks of Point Lake, in latitude 65°, where its earliest arrival was noted the following year on the 12th of June. Dr. Richardson says that their clustered nests are of

frequent occurrence on the faces of cliffs of the Barren Grounds, and not uncommon throughout the course of the Slave and Mackenzie's Rivers; and that their first appearance at Fort Chipewyan was on the 25th of June, 1825. Major Long's discovery was named *Hirundo lunifrons* by Say in 1823; and the following year Audubon published his hitherto MS. name *respublicana* in the Annals of the New York Lyceum of Natural History, with some remarks on the species, in connection with some observations of Governor DeWitt Clinton, who called the bird *Hirundo opifex*. Meanwhile, Vieillot had described the West Indian conspecies as *Hirundo fulva;* and the future Prince Bonaparte adopted this name for our species in 1825. Thus, in the short space of two years, 1823–25, the interesting Anonyma, "No. 35", before known only by number, like the striped inmates of some of our penal establishments, suddenly became quite a lion, with titles galore in the binomial *haut ton*. But it was not till 1850 that it was actually raised to the sublime degree of *Petrochelidon*, though it had long been taken and held to be a master-mason.

The Cliff Swallow has been supposed by some to be an immigrant of comparatively recent date in the Eastern United States; but it does not appear that any broad theory of a general progressive eastward extension is fairly deducible from the evidence we possess. On the contrary, much of the testimony is merely indicative of the dates, when, in various parts of the country, the birds began to build under eaves, and so established colonies where none existed before; and some of the evidence opposes the view just mentioned. The Swallows, as a rule, are birds of local distribution in the breeding season, notwithstanding their pre-eminent migratory abilities; they tend to settle in particular places, and return year after year; and nothing is better known than that one town may be full of Swallows of several kinds unknown in another town hard by. I suppose the real meaning of the record is "only this and nothing more". Nevertheless, these accounts are interesting, and all have their bearing on the natural history of this remarkable bird. It was unknown to Wilson. In 1817, between Audubon's times of observation in Kentucky, Clinton says he first saw Eave Swallows at Whitehall, New York, at the southern end of Lake Champlain. Zadock Thompson found them at Randolph, Vt., about the same time. Mr. G. A. Boardman tells me that they were no novelty at St. Stephens, New Bruns-

wick, in 1828. Dr. Brewer received their eggs from Coventry, Vt., in 1837, when they were new to him; but the date of their appearance there was not determined. They are said by the same writer to have appeared at Jaffrey, N. H., in 1838; at Carlisle, Pa., in 1841; and the appearance of a large colony which he observed at Attleborough, Mass., in 1842, indicated that they had been there for several years. During the last-mentioned year, they were present, apparently for the first time, in Boston and neighboring metastatic foci of the globe. The record also teaches that these birds do not necessarily change from "Cliff" to "Eave" Swallows in the East, for in 1861 Professor Verrill discovered a large colony breeding on limestone cliffs of Anticosti, remote from man, and in their primitive fashion. That the settlement of the country has conduced to the general dispersion of the birds during the breeding season in places that knew them not before is undoubted; but that any general eastward migration ever occurred, or that there has been in recent times a progressive spread of the birds across successive meridians, is less than doubtful—is almost disproven. Birds that can fly like Swallows, and go from South America to the Arctic Ocean, are not likely to cut around *viâ* the Mississippi or the Rocky Mountains, houses or no houses. Moreover, the scarcity or apparent absence of these birds in the Southern States, or most portions thereof, may be simply due to the ineligibility of the country, and only true for a part of the year. It cannot be that the breeding birds of Pennsylvania, New York, and New England come and go by other than a direct route; and if not detected in the Southern States, it must be because they fly over the country in their migrations, and do not stop to breed. It is authenticated that they nest at least as far south as Washington, D. C., where Drs. Coues and Prentiss found them some twenty years ago to be summer residents, arriving late in April and remaining until the middle of September, though they were not as abundant as some of the other Swallows.

It may be remembered in this connection that a happy conjunction of circumstances is required to satisfy these birds. Not only are cliffs or their substitutes necessary, but these must be situated where clayey mud, possessing some degree of adhesiveness and plasticity, can be procured. The indication is met at large in the West, along unnumbered streams, where the birds most do congregate; and their very general dispersion

in the West, as compared with their rather sporadic distribution in the East, is thus readily explained. The great veins of the West—the Missouri, the Columbia, and the Colorado,—and most of their venous tributaries, returning the humors from the clouds to their home in the sea, are supplied in profusion with animated congregations of the Swallows, often vastly more extensive than those gatherings of the feathered Sons of Temperance beneath our eaves, where the sign of the order,—a bottle, neck downward,—is set for our edification.

All are familiar, doubtless, with the architecture of these masons—if any be not, the books will remove their ignorance. But there are many interesting details, perhaps insufficiently elucidated in our standard treatises. It is generally understood that the most perfect nest, that is, a nest fully finished and furnished with a neck, resembling a decanter tilted over,—that such a "bottle-nosed" or "retort-shaped" nest, is the typical one, indicating the primitive fashion of building. But I am by no means satisfied of this. Remembering that the Swallows are all natural hole-breeders, we may infer that their early order of architecture was a wall, rampart, or breastwork, which defended and perhaps enlarged a natural cavity on the face of a cliff. Traces of such work are still evident enough in those frequent instances in which they take a hole in a wall, such as one left by a missing brick, and cover it in either with a regular domed vestibule or a mere cup-like rim of mud. It was probably not until they had served a long apprenticeship that they acquired the sufficient skill to stick a nest against a perfectly smooth, vertical support. Some kind of domed nest was still requisite, to carry out the idea of hole-breeding, a trait so thoroughly ingrained in Hirundine nature, and implying perfect covering for the eggs; and the indication is fully met in one of the very commonest forms of nest, namely, a hemispherical affair, quite a "breastwork" in fact, with a hole at the most protuberant part, or just below it. The running on of a neck to the nest, as seen in those nests we consider the most elaborate, seems to merely represent a surplusage of building energy, like that which induces a House Wren, for example, to accumulate a preposterous quantity of trash in its cubby-holes. Such architecture reminds me of the Irishman's notion of how cannon are made—by taking a hole and pouring the melted metal around it. It is the rule, when the nest is built in any exposed situation. But since the Swal-

lows have taken to building under eaves, or other projections affording a degree of shelter, the bottle-necked, even the simply globular nests, seem to be going out of fashion; and thousands of nests are now built as open as those of the Barn Swallow, being simply half-cups attached to the wall, and in fact chiefly distinguished from those of Barn Swallows by containing little or no hay. I suppose this to be a piece of atavism—a reversion to primitive ways. The Barn and Eave Swallows are our only kinds that do not *go into a hole* or its equivalent; and the indication of shelter or covering, in all cases indispensable, being secured by the roof itself beneath which they nestle, the special roofing of each nest becomes superfluous. Hence the open cups these Swallows now construct.

Considering how sedulously most birds strive to hide their nests, and screen themselves during incubation, it becomes a matter of curious speculation why these Swallows should ever build beneath our eaves, in the most conspicuous manner, and literally fly in the face of danger. Richardson comments on this singular and excessive confidence in man, too often betrayed, and which cannot, on the whole, be conducive to the best interests of their tribe. He speaks of a colony that persisted in nesting just over a frequented promenade, where they had actually to graze people's heads in passing to and from their nests, and were exposed to the curiosity and depredations of the children; yet they stuck to their first choice, even though there were equally eligible and far safer locations just at hand. Sir John wonders what cause could have thus suddenly called into action such confidence in the human race, and queries what peculiarity of economy leads some birds to put their offspring in the most exposed situation they can find. We have all seen the same thing, and noted the pertinacity with which these and other Swallows will cling to their caprices, though subjected to every annoyance, and repeatedly ejected from the premises by destruction of their nests. I have two notable cases in mind. At Fort Pembina, Dakota, a colony insisted on building beneath the low portico of the soldiers' barracks, almost within arm's reach. Being noisy and untidy, they were voted a nuisance, to be abated, but it was "no use"; they stuck, and so did their nests. In the adjoining British province of Manitoba, at one of the trading-posts I visited, it was the same thing over again; their nests were

repeatedly demolished, on account of the racket and clutter they made, till the irate lord of the manor found it cheaper in the end to let the birds alone, and take his chances of the morning nap. I think such obstinacy is due to the bird's reluctance to give up the much-needed shelter which the eaves provide against the weather—indeed, this may have had something to do with the change of habit in the beginning. The Cliff Swallow's nest is built entirely of mud, which, when sun baked into 'adobe', is secure enough in dry weather, but liable to be loosened or washed away during a storm. In fact, this accident is of continual occurrence, just as it is in the cases of the Chimney Swifts. The birds' instinct—whatever that may mean; I despise the word as a label of our ignorance and conceit—say rather, their reason, teaches them to come in out of the rain. This may also have something to do with the *clustering* of nests, commonly observed when the birds build on the faces of cliffs, for obviously such a mass would withstand the weather better than a single edifice.

It is pleasant to watch the establishment and progress of a colony of these birds. Suddenly they appear—quite animated and enthusiastic, but undecided as yet; an impromptu debating society on the fly, with a good deal of sawing the air to accomplish, before final resolutions are passed. The plot thickens; some Swallows are seen clinging to the slightest inequalities beneath the eaves, others are couriers to and from the nearest mud-puddle; others again alight like feathers by the water's side, and all are in a twitter of excitement. Watching closely these curious sons and daughters of Israel at their ingenious trade of making bricks, we may chance to see a circle of them gathered around the margin of the pool, insecurely balanced on their tiny feet, tilting their tails and ducking their heads to pick up little "gobs" of mud. These are rolled round in their mouths till tempered, and made like a quid into globular form, with a curious working of their jaws; then off go the birds, and stick the pellet against the wall, as carefully as ever a sailor, about to spin a yarn, deposited his chew on the mantel-piece. The birds work indefatigably; they are busy as bees, and a steady stream flows back and forth for several hours a day, with intervals for rest and refreshment, when the Swallows swarm about promiscuously a-flycatching. In an incredibly short time, the basement of the nest is laid, and the whole form becomes clearly outlined; the mud dries quickly, and

there is a standing place. This is soon occupied by one of the pair, probably the female, who now stays at home to welcome her mate with redoubled cries of joy and ecstatic quivering of the wings, as he brings fresh pellets, which the pair in closest consultation dispose to their entire satisfaction. In three or four days, perhaps, the deed is done; the house is built, and nothing remains but to furnish it. The poultry-yard is visited, and laid under contribution of feathers; hay, leaves, rags, paper, string—Swallows are not very particular—may be added; and then the female does the rest of the "furnishing" by her own particular self. Not impossibly, just at this period, a man comes with a pole, and demolishes the whole affair; or the *enfant terrible* of the premises appears, and removes the eggs to enrich his sanded tray of like treasures; or a tom-cat reaches for his supper. But more probably matters are so propitious that in due season the nest decants a full brood of Swallows—and I wish that nothing more harmful ever came out of the bottle.

Seeing how these birds work the mud in their mouths, some have supposed that the nests are agglutinated, to some extent at least, by the saliva of the birds. It is far from an unreasonable idea—the Chimney Swift sticks her bits of twigs together, and glues the frail cup to the wall with viscid saliva; and some of the Old World Swifts build nests of gummy spittle, which cakes on drying, not unlike gelatine. Undoubtedly some saliva is mingled with the natural moisture of the mud; but the readiness with which these Swallows' nests crumble on drying shows that saliva enters slightly into their composition—practically not at all—and that this fluid possesses no special viscosity. Much more probably, the moisture of the birds' mouths helps to soften and temper the pellets, rather than to agglutinate the dried edifice itself.

In various parts of the West, especially along the Missouri and the Colorado, where I have never failed to find clustering nests of the Cliff Swallow, I have occasionally witnessed some curious associates of these birds. In some of the navigable cañons of the Colorado, I have seen the bulky nests of the Great Blue Heron on flat ledges of rock, the faces of which were stuccoed with Swallow-nests. How these frolicsome creatures must have swarmed around the sedate and imperturbable Herodias, when she folded up her legs and closed her eyes, and went off into the dreamland of incubation, undis-

turbed, in a very Babel! Again, I have found a colony of Swallows in what would seem to be a very dangerous neighborhood—all about the nest of a Falcon, no other than the valiant and merciless *Falco polyagrus*, on the very minarets and buttresses of whose awe-inspiring castle, on the scowling face of a precipice, a colony of Swallows was established in apparent security. The big birds seemed to be very comfortable ogres, with whom the multitude of hop-o'-my-thumbs had evidently some sort of understanding, perhaps like that which the Purple Grackles may be supposed to have with the Fish-hawks when they set up housekeeping in the cellar of King Pandion's palace. If it had only been a Fish-hawk in this case instead *Falco polyagrus*, we could understand such amicable relations better—for Cliff Swallows are cousins of Purple Martins, and, if half we hear be true, *Progne* was Pandion's daughter.

Genus COTYLE Boie

Hirundo, p., *of Authors.*
Cotile, *Boie*, Isis, 1822 (type *H. riparia*).
Cotyle, *Boie*, Isis, 1826.
Biblis, *Less.* "1837".

Tarsus with a tuft of feathers at the base below, near insertion of the hind toe. Edge of wing not rough. Claws little curved, the lateral reaching beyond the base of the middle one. Bill very small, the nostrils opening laterally and overhung by a membrane. Tail much shorter than wings, emarginate. Coloration dull and simple—in the type of the genus lustreless brown above and across breast, white below. Eggs uncolored, laid in holes in the ground excavated by the bird.

There is a single American species of this particular group, not different from that of Europe, and one of the most nearly cosmopolitan of Passerine birds, inhabiting Europe, Asia, Africa, and America.

Bank Swallow, or Sand Martin

Cotyle riparia

Hirundo riparia, of many pre-Linnæan writers, as *Gesner*, *Jonst.*, *Charlet.*, *Willugby*, *Ray*, etc.—*L.* SN. i. 10th ed. 1758, 192, n. 4 (ex Fn. Svec. n. 247, etc.).—*Brünn*, OB. 1764, 74, n. 291.—*L.* SN. i. 12th ed. 1766, 344, n. 4.—*Bodd.* Tabl. PE. 1783, 32; pl. 543, f. 2.—*Gm.* SN. i. 1788, 1019, n. 4.—*Schaeff.* Mus. Orn. 1789, 23, n. 75.—*Lath.* IO. i. 1790, 575, n. 10.—*Wils.* AO. v. 1812, 46, pl. 38, f. —.—*V.* Ency. Méth. ii. 1823, 517, n. 2.—*De Witt Clint.* Ann. Lyc. N. Y. i. 1824, 159.—*Bp.* Journ. Phila. Acad. iv. 1825, 258.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 65.—*Less.* Tr. Orn. 1831, 269.—*S. & R.* FBA. ii. 1831, 333.—*Nutt.* Man. i

1832, 607.—*Temm.* Man. i. —, — ; iii. 1835, 300.—*Kaup*, Thierr. ii. pt. i. 1836, 114.—*Aud.* OB. iv. 1838, 584, pl. 385.—*Towns.* Journ. Phila. Acad. viii. 1839, 155.—*Peab.* Rep. Orn. Mass. 1839, 346.—*Aud.* Syn. 1839, 36.—*Aud.* BA. i. 1840, 187 pl. 50.—*Macg.* Man. Brit. Orn. i. 1840, 76.—*Blyth*, PZS. 1842, 93 (Europe and India).—*Siedh.* Stubenv. Deutsch. 1845, 358.—*Gir.* BLI. 1844, 37.—*Lemb.* Av. Cuba, 1850, 47, pl. 7, f. 3.—*Jones*, "Nat. Berm. 1859, 34".—*Brandt*, Anim. Vert. Sibérie, ——, 27.—*Tobias*, Naum. i. 1851, 67 (Oberlausitz).—*Lilj.* Naum. ii. Heft ii. 1852, 94 (Northern Russia).—*Pässl.* J. f. O. 1853, 258.—*Jäckal*, J. f. O. 1853, 367.—*Thomps.* Vermont, 1853, 98.—*Read*, Pr. Phila. Acad. 1853, 401.—*Radde*, J. f. O. 1854, 59 (Southern Russia).—*Vangerow*, J. f. O. 1854, 190.—*Pratten*, Tr. Illinois Agric. Soc. i. 1855, 600.—*Henry*, Pr. Phila. Acad. 1855, 308.—*Haym.* Pr. Phila. Acad. 1856, 288.—*Putn.* Pr. Ess. Inst. i. 1856, 206.—*Müller*, J. f. O. 1856, 226 (Provence).—*Pässl.* J. f. O. 1856, 41 (Anhalt).—*Martens*, J. f. O. 1859, 216 (Bermudas).—*Finsch*, J. f. O. 1859, 384 (Bulgaria).—*Bland*, Smiths. Rep. for 1858, 1859, 287 (Bermuda).—*Willis*, Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).—*Powys*, Ibis, 1860, 234 (Epirus).—*Gieb.* Vög. 1860, 73, f. 134.—*Kniper*, J. f. O. 1860, 284 (Greece).—*Hintz I.* J. f. O. 1861, 224, 228 (migrations, &c.).—*Zand.* Arch. Mecklenb. xv. 1861, 60.—*Hintz I.* J. f. O. 1863, 424; 1864, 182; 1865, 233; 1866, 148; 1867, 166; 1868, 394 (Pomerania).—*Nordm.* J. f. O. 1864, 368 (Scandinavia).—*Sperl.* Ibis, 1864, 283 (Malta).—*Wright*, Ibis. 1864, 57 (Malta).—*Pässl.* J. f. O. 1865, 32 (Anhalt).—*Weiz*, Pr. Bost. Soc. x. 1866, 267 (Labrador).—*Holtz*, J. f. O. 1868, 156 (Gottska-Sandö).—*Brown*, Pr. Bost. Soc. xii. 1869, 207 (Madeira).—*Fowler*, Am. Nat. iii. 1869, 116 (biography).—*Trippe*, Pr. Ess. Inst. vi. 1871, 114.—*Rey*, J. f. O. 1872, 143 (Portugal).—*Harting*, Man. Br. B. 1872, 35.

Hirundo (Cotyle) riparia, *Schrenck*, Amurl. 1860, 389.—*Radde*, Reisen, 1863, 281.

Cotile riparia, *Boie*, Isis, 1822, 550.

Cotyle riparia, *Boie*, Isis, 1826, —.—*Brehm*, Handb. Stub. Hausvög. 1832, 278.—*Bp.* CGL. 1838, 9.—*Boie*, Isis, 1844, 170.—*Gamb.* Pr. Phila. Acad. 1846, 111 (Cuba).—*Bp.* CA. i. 1850, 342.—*Burnett*, Pr. Bost. Soc. iv. 1851, 116.—*McCall*, Pr. Phila. Acad. 1851, 215.—*Cabot*, Naum. ii. Heft iii. 1852, 66.—*Woodh.* Rep. Zuñi and Colo. R. 1853, 65.—*Hoy*, Pr. Phila. Acad. 1853, 308.—*Brew.* Pr. Bost. Soc. iv. 1854, 325.—*Jäckal*, J. f. O. 1854, 496 (Bavaria).—*Müller*, J. f. O. 1855, 5 (Northern Africa).—*Cass.* Illust. 1855, 247.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 582.—*Gundl.* J. f. O. 1856, 5 (Cuba).—*Newb.* PRRR. vi. 1857, 78.—*Brew.* N. A. Oöl. 1857, 105, pl. 4, f. 49.—*Adams*, PZS. 1858, 495 (India).—*Bd.* BNA. 1858, 313.—*Heerm.* PRRR. x. 1859, 36.—*Henry*, Pr. Phila. Acad. 1859, 106.—*Tristran*, Ibis, 1859, 27 (Palestine); 434 (Northern Africa).—*Salv.* Ibis, 1859, 302 (Eastern Atlas).—*Brew.* Pr. Bost. Soc. viii. 1860, 306 (Cuba).—*Cab.* J. f. O. 1861, 93 (Costa Rica).—*Gundl.* J. f. O. 1861, 330 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 162.—*Homeyer*, J. f. O. 1862, 254 (Balearics).—*Verr.* Pr. Bost. Soc. ix. 1862, 138 (Anticosti).—*Verr.* Pr. Ess. Inst. iii. 1862, 148.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Blak.* Ibis, 1862, 4; 1863, 65 (Saskatchewan).—*R. Blas.* Beigabe J. f. O. 1863, 46 (Braunschweig).—*Swinh.* PZS. 1863, 287 (China).—*March*, Pr. Phila. Acad. 1863, 296 (Jamaica).—*Tristr.* PZS. 1864, 443 (Palestine).—*v. Droste*, J. f. O. 1864, 423 (Borkum).—*Allen*, Pr. Ess. Inst. iv. 1864, 65.—*Hoy*, Smiths. Rep. for 1864, 1865, 437.—*Dress.* Ibis, 1865, 479 (Texas).—*More*, Ibis, 1865, 139 (Great Britain).—*Salvad.* J. f. O. 1865, 131 (Sardinia).—*Bd.* Rev. AB. 1865, 319.—*McIlwr.* Pr. Ess. Inst. v. 1866, 86.—*Coues*, Pr. Phila. Acad. 1866, 72 (Arizona).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*v. Droste*, J. f. O. 1866, 390 (Borkum).—*Salv.* Ibis, 1866, 192 (Guatemala).—*Drake*, Ibis, 1867, 425 (Northern Africa).—*Tristr.* Ibis, 1867, 359 (Palestine).—*Tayl.* Ibis, 1867, 57 (Egypt).—*Degl.-Gerbe*, OE. i. 1867, 596.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 96 (Costa Rica).—*Coues*, Am. Nat. ii. 1868, 161.—*Coues*, Pr. Ess. Inst. v. 1868, 276.—*Coues*, Pr. Bost. Soc. xii. 1868, 111 (South Carolina).—*Turnb.* B. E. Pa. 1869, 20; Phila. ed. 13.—*Coop.* Am. Nat. iii. 1869, 474.—*v. Frantz*, J. f. O. 1869, 295 (Costa Rica).—*Dall & Bann.* Tr. Chic. Acad. i. 1869, 280 (Alaska).—*Coop.* B. Cal. i. 1870, 110.—*Sharpe*, PZS. 1870, 296 (Ethiopian region).—*E. & B.* Ibis, 1870, 200 (Turkey).—*Shelley*, Ibis, 1871, 136 (Egypt).—*Gurney, jr.* Ibis, 1871, 74 (Algeria).—*Jerdon*, Ibis, 1871, 353 (India).—*Saunders*, Ibis, 1871, 205 (Spain).—*Fritsch*, J. f. O. 1871, 201 (Bohemia).—*Coues*, Pr. Phila. Acad. 1871, 21 (Fort Macon, N. C.).—*Allen*, Bull. MCZ. ii, 1871, 269 (Florida, in winter); iii. 1872, 176.—*Coues*, Key, 1872, 114.—*Tactanowki*, J. f. O. 1872, 353 (Eastern Siberia).—*Aiken*, Pr. Bost. Soc. xv. 1872, 198.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 369.—*Scott*, Pr. Bost. Soc. xv. 1872, 223.—*Trippe*, Pr. Bost. Soc. xv. 1873, 235.—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 706, 713.—*Alst. & Br*

Ibis, 1873, 59 (Archangel).—*Snow*, B. Kans. 1873, 5.—*Coues*, BNW. 1874, 89.—*Hancock*, B. of Northumb. and Durh. 1874, 81.—*Allen*, Pr. Bost. Soc. xvii. 1874, 54.—*Kirtl.* Pr. Cleveland Acad. i. 1874, 270.—*B. B. & R.* NAB. i. 1874, 333, pl. 16, f. 14.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 11.—*Hensh.* ibid. 42.—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 220.—*Gentry*, Life-Hist. 1876, 194.—*Minot*, BNE. 1877, 148.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 17 (Tehuantepec).—*Ridgw.* Rep. Surv. 40th Par. iv. 1877, 445.

Cotyle littoralis, *Ehrenb.* "Mus. Berol."

Hirundo riparia americana, *Maxim.* J. f. O. 1858, 101.

Hirundo cinerea, *Vieill.* "Nouv. Dict. d'Hist. Nat. xiv. 1817, 526".

Cotyle fluviatilis, Cotyle microrhynchos. *Brehm*, "Vög. Deutschl. i. 142, 143".

Hirondelle de rivage, *Buff.* "vi. 632; PE. 543, f. 2".—*Briss.* Orn. ii. 1760, 506, n. 12 (*q. v.* for a long array of early synonyms).—*Le Moine*, Ois. Canad. 1861, 145.

Hirundo riparia; *sive* **Drepanis**, *Briss.* l. c. (Δρεπανὶς, Greek.)

Shore-bird, *Willughy*, "Orn. 213, pl. 39".

Sand Swallow, *Penn.* AZ. ii. 1785, 430, n. 332.

Sand Martin, *Lath.* Syn. ii. pt. ii. 1783, 568, n. 10.

Cotyle rivérain, *Degl.-Gerbe*, l. c.

Uferschwalbe, German.

Bank Swallow, of many English and American authors.—(Not of *Coues*, Am. Nat. x. 1876, 372, and Bull. Nutt. Club, i. 1876, 96, the actual reference being to *Stelgidopteryx serripennis.*)

HAB.—Europe, Asia, Africa, America. In this country, the whole of North and Middle America, including West Indies. South America to Brazil (*Pelzeln*). Breeds indifferently in its North American range. Winters from the southern border of the United States southward.

CH. SP.— ♂ ♀ *Murina, alis caudâque obscurioribus; infrà alba, torque pectorali murino.*

♂ ♀: Lustreless mouse-brown, the wings and tail fuscous. Below white, with a broad pectoral band of the color of the back. A dusky anteorbital spot. Length about 5 inches; extent, 10½; wing, 4; tail, 2.

The sexes are quite similar, and the young differ chiefly in whitish edgings of the feathers, especially of the wings and tail. Even in the adult, the upper parts are apt to be not quite uniform, there being paler gray edgings of most of the feathers. The dark pectoral band sometimes extends backward along the middle of the under parts. Autumnal specimens have the secondaries white-tipped. Very young birds have rather rusty than whitish skirting of the dark feathers, and the white throat speckled with the same.

OF this cosmopolite, little remains to be said by any one at the present day. One of our best writers wittily complains that the poets have stolen our best thoughts; and I might lament, that some of my best bird-biographies have been plagiarized in the most shocking manner by ornithologists who died before I was born. But I forgive them; they contribute to my Bibliography of the luminous and voluminous literature of the science, in one or another corner of which the anxious reader will find all that is known about Bank Swallows. I have learned much about the bird from such sources,—more perhaps from the much broader pages of another book,—yet

find myself unable to contribute anything of note to the common fund. Even regarding the specialties of the subject, as far as the Colorado Basin is concerned, the appearance of the bird's name in thick type, in the centre of the line, is sufficient.

Genus STELGIDOPTERYX Baird

Hirundo, Cotyle, p. *of Authors.*
Stelgidopteryx, *Bd.* BNA. 1858, 312; Rev. AB. 1865, 312. (Type *H. serripennis* Aud.)

This genus has the general aspect of *Cotyle*, the form and coloration being much the same; but it differs in several important particulars. The essential character is the roughness of the edge of the wing, the outer web of the first primary being converted into a series of stiff, recurved hooks. Other Swallows, as *Psalidoprocne* Cab., have the peculiar wing structure, but are otherwise different. The design of the structure is not clear, but we may readily suppose that the hooks assist the birds in crawling into their holes, and in clinging to vertical or hanging surfaces. The tarsus is slightly covered with feathers above, but lacks the curious tuft seen at the base of the hind toe in *Cotyle*. The lateral claws are curved, and do not reach beyond the base of the middle. The basal joint of the middle toe is extensively adherent to the outer, much less so to the inner. The small bill shows oval superior nostrils margined by membrane behind, but not at all overhung. The tail is short and slightly emarginate. The coloration is dull and simple, much as in *Cotyle*, but there is a tendency to fulvous not seen in the latter. The eggs are uncolored, and laid in holes dug in the ground by the birds, or elsewhere.

The species are few, and confined to America, chiefly in its warmer parts. Only one inhabits the United States.

The Rough-winged Swallow

Stelgidopteryx serripennis

Hirundo serripennis, *Aud.* OB. iv. 1838, 593, pl.—.—*Aud.* Syn. 1839, 37.—*Aud.* BA. i. 1840, 193, pl. 51.—*Van Fleet*, Bull. Nutt. Club, i. 1876, 9 (special paper on habits).

Cotyle serripennis, *Boie*, Isis, 1844, 170.—*Bp.* CA. i. 1850, 342.—*Cass*, Illust. B. Cal. & Tex. 1855, 247.—*? ? Scl.* PZS. 1856, 285 (Cordova).—*Newb.* PRRR. vi. 1857, 79.—*Brew.* N. Am. Oöl. 1857, 106, pl. 4, f. 50.—*Bd.* BNA. 1858, 313.—*Kenn.* PRRR. x. 1859, 24.—*Heerm.* PRRR. x. 1859, 36.—*? S. & S.* Ibis, 1859, 13 (Guatemala).—*? Owen*, Ibis, 1861, 61 (Guatemala, breeding).—*Coop. & Suckl.* NHWT. 1860, 186.—*Barn.* Smiths. Rep. for 1860, 1861, 436 (Pennsylvania).—*Lord*, Pr. Roy. Arty. Inst. iv. 1864, 116 (British Columbia).—*Coues*, Ibis, 1865, 163 (Arizona).—*Dress.* Ibis, 1865, 479 (Texas).—*Brown*, Ibis, 1868, 421 (Vancouver).—*Butch.* Pr. Phila. Acad. 1868, 149 (Texas).—*Haym.* Cox's Geol. Surv. Indiana, 1869, 218 (Indiana).—*Hoy*, Pr. Bost. Soc. xii. 1869, 400 (nesting).—*Turnb.* B. E. Pa. 1869, 20; Phila. ed. 13.—*Coop.* Pr. Cal. Acad. 1870, 75.—*Coop.* B. Cal. i. 1870, 110.—*Parker*, Am. Nat. v. 1871, 168.—*Scott*, Pr. Bost. Soc. xv. 1872, 223.—*Kirtl.* Pr Cleveland Acad. i. 1874, 272 (Ohio).—*Allen*, Pr. Bost. Soc. xvii. 1874, 54 (Dakota).

Cotyle serrepennis, *Gregg*, Pr. Elmira Acad. 1870.

Stelgidopteryx serripennis, *Bd.* Rev. AB. 1865, 314 (type of the genus).—*Coues,* Pr. Phila. Acad. 1866, 72 (Fort Whipple, Ariz.).—*Coues,* Pr. Bost. Soc. xii. 1868, 111 (South Carolina).—*Coues,* Key, 1872, 114.—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 713.—*Ridgw.* Bull. Ess. Inst. v. 1873, 181 (Colorado).—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 370 (Illinois).—*Merr.* Am. Nat. viii. 1874, 8, 87.—*Coues,* BNW. 1874, 90.—*B. B. & R.* NAB. i. 1874, 350, pl. 16, f. 12.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 11.—*Hensh.* ibid. 42, 60, 77, 105.—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 219.—*Brewst.* Ann. Lyc. N. Y. xi. 1875, 139 (Virginia, habits).—*Gentry,* Life-Hist. 1876, 196.—*Purdie,* Bull. Nutt. Club, ii. 1877, 21 (Connecticut).—*Merr.* Trans. Conn. Acad. iv. 1877, 31.—*Langdon,* List B. Cincinnati, 1877, 7 (abundant; nesting in holes in banks like *C. riparia*).—*Ridgw.* Rep. Surv. 40th Par. iv. 1877, 446.

Stelgidopterix serripennis, *Wheat.* Ohio Agric. Rep. for 1874, 1875, 565.

A closey related, if really different, species is *Cotyle fulvipennis, Scl.* PZS. 1859, 364 (Xalapa); *Bd.* Rev. AB. 1865, 316; *Salv.* PZS. 1870, 184 (Veragua).

Hab.—United States, from Atlantic to Pacific, and probably adjoining British Provinces. British Columbia (*Lord*). Rare or wanting in Northeastern States (Connecticut, *Merriam*). South to Guatemala.

Ch. sp.— ♂ ♀ *Murinus, alis caudâque obscurioribus; infrà dilutior, posticè albicans.*

♂ ♀: Lustreless mouse-brown or brownish-gray, paler below, gradually whitening posteriorly. Wings and tail darker than the upper parts. Rather larger than the last species. No dark pectoral band contrasting with white. No tuft of feathers at the base of the hind toe. Outer web of outer primary stiffened and converted into a series of little hooks.

Young: At a very early age, the feathers of the back, rump, and wings are suffused or edged with rich rusty-brown, while the under parts are more or less tinged with a paler shade of the same. The hooklets of the wings are only fully developed in adult birds, and are not appreciable at all in young ones.

OF the Rough-winged Swallow, type of a notable genus and an interesting species in many respects, no adequate biography, reflecting all the information we have gradually acquired, has yet appeared; though various original contributions to such history, as those furnished by Audubon, Brewer, Van Fleet, and others, have supplied the requisite material. Our Rough-wing was not the first-discovered representative of this curious group, superficially so similar to *Cotyle*, yet quite distinct; for, many years before Audubon's discovery of *serripennis*, Vieillot named a *Hirundo ruficollis*, or *H. flavigastra*, an inhabitant of South America, subsequently determined to be a *Stelgidopteryx*. In later times, several additional species have been described; the *Cotyle fulvipennis* of Sclater, 1859, the *C. uropygialis* of Lawrence, 1863, and the *S. fulvigula* of Baird, 1865, all of which inhabit Middle America, and some of which are probably not very distinct species.

Audubon discovered his species near Bayou Sara, in Louisiana, October 20, 1819, but at that time did not perhaps recognize it as distinct from the Sand Martin; for he did not describe it for many years afterward, and then did so from a pair procured in South Carolina. He noted that the bird was like the Bank Swallow, "but readily distinguishable by drawing the finger along the edge of the wing, when the stiff projecting tips of the filaments are felt like the edge of a fine saw." He knew nothing of the bird's habits, and surmised that its most habitual residence might prove to be far westward, perhaps the Valley of the Columbia River, which was a famous *ultima Thule* in ornithology of the Audubonian period. Its distribution is now known to include the entire breadth of the United States, excepting some portions of New England, whence we have no record as yet. But the bird certainly enters New England. This fact was first announced, so far as I know, by Mr. H. A. Purdie, who states that an individual was shot at Suffield, Conn., by Mr. Shores, June 6, 1874; and Mr. Merriam states that Mr. E. P. Bicknell found the bird in numbers at Riverdale, New York, within a few miles of the Connecticut line. I had written in 1868 that it was singular there should be no New England instances on record, "as the species certainly *ought* to be found there"; and some of the New England ornithologists may learn in the course of time that every bird known in a certain portion of the Middle States will also be found in the Connecticut Valley. Determining thus the northeasternmost point at which the Rough-winged Swallow has been found, we may turn in another direction along its supposed northern boundary. Its name appears in Gregg's Elmira list, but not in McIlwraith's Canada West, nor in Trippe's Minnesota. I never saw the bird in Dakota or Montana; but west of the Rocky Mountains, Mr. J. K. Lord seems to have met with it along the same parallel of 49°; and we also have Brown's Vancouver record. This exhibits a northern limit coincident with that of *Tachycineta thalassina*, and we may suppose that the northern border of the United States is nearly the terminus of the species, excepting in New England, where the bird is not known to go so far.

In the other direction, the Rough-winged Swallow has been traced through Mexico to Guatemala, though some of the extralimital quotations of "serripennis" may actually refer to other species. In the Middle, Southern, and Western States,

the dispersion of the species is general, calling for no comment; but the various records from the West may be profitably analyzed. Dr. A. L. Heermann early found the bird in California, as recorded by himself and by Cassin in 1855, as well as at other places in Texas, New Mexico, and Arizona. Audubon's original surmise respecting its extension to the Columbia was verified by Dr. Newberry, and also by Drs. Cooper and Suckley, who found the bird common in Oregon and Washington Territories, especially coastwise, about the cliffs of the bays and inlets. Dr. Cooper noted its arrival near the Columbia in May, and its departure in August. In his later work on Californian Birds, the latter records his first observation of the bird at Fort Mojave, on the 27th of February, but adds that he has seen them at San Diego on the 9th of November and 27th of January, "so that, if they do not winter within the State, they do not go far beyond it." Dr. Kennerly found it along the Colorado in February. Mr. H. E. Dresser noted its arrival at Eagle Pass from the south the 21st of February, and observed its breeding at San Antonio late in April. In higher portions of Arizona, I found it to be a common summer resident, arriving at Fort Whipple late in April, and remaining through the greater part of September. Henshaw saw it in numbers in Southern Colorado during May, and also about the pueblo of Zuñi in New Mexico; it was still more abundant at Provo, Utah, and other points in the same general area, where also Mr. Ridgway attests its presence in great numbers. In some places, says the last-named, it was the most numerous representative of the family next after the Cliff and White-bellied Swallows. Other records might be cited, but I have given enough to show that the Rough-winged Swallow is generally distributed over the United States, excepting most of New England, but not much further northward; agreeing in this respect with the Violet-green, and being, next after this species, more restricted in its habitat than any other Swallow of North America.

Its breeding habits have been specially studied by Dr. Brewer and one or two other persons, who have left us the record of their observations. The nidification is substantially like that of the Bank Swallow, but there are various discrepancies, as Mr. Van Fleet has shown, even when the bird breeds in holes in the ground, to say nothing of the wide departure it makes in nesting about human habitations. In 1843 and 1844, Professor Baird and Dr. Brewer made some observations, which

remain among the best we possess. The following account is rendered by Dr. Brewer in his last work:—

"This species was first found breeding in Carlisle, Penn., by Professor Baird, in the summer of 1843. The following year I visited the locality early in June, and had an opportunity to study its habits during the breeding season. We found the bird rather common, and examined a number of their nests. None that we met with were in places excavated by the birds, although previously several had been found that had apparently been excavated in banks in the same manner with the Bank Swallow. All the nests (seven in number) that we then met with were in situations accidentally adapted to their need, and all were directly over running water. Some were constructed in crevices between the stones in the walls and arches of bridges. In several instances the nests were but little above the surface of the stream. In one, the first laying had been flooded, and the eggs chilled. The birds had constructed another nest above the first one, in which were six fresh eggs, as many as in the other. One nest had been built between the stones of the wall that formed one of the sides of the flume of a mill. Two feet above it was a frequented foot-path, and, at the same distance below, the water of the mill-stream. Another nest was between the boards of a small building in which revolved a water-wheel. The entrance to it was through a knot-hole in the outer partition, and the nest rested on a small rafter between the outer and the inner boardings. The nests were similar in their construction to those of the Bank Swallow, composed of dry grasses, straws, and leaves, and lined with a few feathers; but a much greater amount of material was made use of, owing, perhaps, to the exposed positions in which they were built."

In this picture of the bird at home we see it already modified in habits by contact with civilization, and require another portraiture, which fortunately Mr. Walter Van Fleet has furnished. In an interesting article entitled "Notes on the Rough-winged Swallow (*Hirundo serripennis*), in Pennsylvania", published in the periodical above cited, he gives the results of two years' careful observation of the economy of the bird, especially in comparison with *Cotyle*. I condense most of his article in the following paragraph:—

The Rough-wing, unlike the Bank Swallow, is not gregarious while nesting, the pairing being their only association. The nests are not crowded together, but scattered at irregular

intervals along the banks of streams, wherever favorable sites occur. The birds seldom excavate holes for themselves, preferring to take some suitable cavity and refit it to their taste; thus, they are often found in deserted Kingfishers' holes, where the nest is placed a foot or so from the entrance. They will also, on finding a decayed root of sufficient size leading in from their favorite sand banks, remove the soft punky wood, following the winding of the root to a depth of about two feet, where they place the nest in an enlarged cavity. Besides this, they like to build in holes in masonry, near water. In the few observed instances of their digging a hole for themselves, they worked in rather a slovenly way, making holes larger than appeared necessary, and invariably *circular* at the entrance—the Bank Swallows' holes, on the contrary, being quite symmetrically elliptical, with the longer axis horizontal, and no larger than required for the free passage of the birds—too small to admit the hand, while the Rough-wings' nests may usually be reached without difficulty, except when built in masonry, in which latter case the birds may pass through a crevice barely wide enough to admit them, providing the cavity within be suitable for a nest. The nests of *serripennis* are more carelessly constructed, as a rule, than those of *riparia* are; the birds do not seem to search at any distance for particular materials, being satisfied with anything that may be at hand. One nest built in a Kingfisher's hole in a sand bank about fifteen rods from a poultry-yard, was composed entirely of the feathers of domestic fowl. In another instance, three fresh eggs were found on the bare sand, in a mere pocket barely six inches deep, indicating that the mother bird was so pressed to lay that she had no time to complete her nest. Not infrequently fresh eggs are found in the same nest with others far advanced in incubation, and occasionally fresh eggs, others newly hatched, and young birds may be found together.

Other writers witness a still wider range of variation in the nidification of the Rough-wings. Cooper speaks of their nesting in California in burrows in sandy banks, two or three feet deep, closely crowded together, and near the upper edge of the embankment; as well as of their resorting sometimes to natural clefts in banks, in adobe buildings, and even in knot-holes. Their breeding in the last-named places is probably exceptional, but it is known that even the Bank Swallow, the most inveterate and conservative of the family, will sometimes take to a tree, and Henshaw furnishes probable confirmation

of Cooper's statement. He noticed Rough-wings several times in suspicious proximity to some dead stubs; and though he never saw one entering the cavities, he thought it probable that the birds sometimes availed themselves of such retreats in the absence of banks suitable for excavation.

The general presence and behavior of our Swallows is so little varied, as well as so familiar, that nothing need be said on this score; the Rough-wing resembles the Bank Swallow in these respects as closely as it does in coloration and physique. The eggs, as in all our species excepting the Barn and the Cliff, are immaculate white, and about as large as the Bank Swallow's, measuring about 0.75 in length by a trifle over 0.50 in breadth; they are said to be rather more uniformly oblong and pointed than those of the species just named, and commonly five or six in number.

I may conclude by referring to a note which I published not long since, on a supposed change of habit of the Bank Swallow, but which proves to have really been based on the present species instead. As recorded in Am. Nat. x. June, 1876, 372, under head of "Notable Change of Habit of the Bank Swallow", I was informed by Dr. Rufus Haymond that a Bank Swallow had nested in a building in Brookville, Indiana. Mr. Ridgway fairly questioned, in the August number of the same periodical, p. 493, whether the species was not the Rough-winged, which breeds exactly as Dr. Haymond described, and as the two species are so similar as to be confounded sometimes, even by good observers. Dr. Haymond shortly sent me a second communication to the same effect, which I published in the Bulletin of the Nuttall Club, vol. i. n. 4, Nov. 1876, p. 96. In this other instance, "a weather-board had become detached from the building, leaving a small opening, in which I watched for two days a Bank Swallow building a nest." Since then, however, he informed me by letter, in answer to my further enquiries, that Mr. Ridgway was right in supposing that the birds were really Rough-wings, and not Bank Swallows.

Genus PROGNE Boie

Hirundo, p. *of Authors.*
Progne, *Boie*, Isis, 1826.
Procne, *Des Murs*, "1852".

Of large size and robust form for this family. Bill long and stout, with much-curved commissure and deflected tip; culmen convex, its tomial edge concavo-convex, like ∽. Nostrils cir-

cular, opening upward, without nasal scale. Feet large, with strong, much-curved claws; tarsus shorter than middle toe and claw; lateral toes about equalling each other in length; basal joint of middle toe freer from lateral toes than usual. Tail forked.

The size of these birds, and their stout, hooked bills, with circular superior nostrils, distinguish the genus from any other of the family. The eggs of our species are white, unmarked. There are two groups to be recognized in *Progne*. Of one of these, *Progne* proper, the species are glossy blue-black, with or without snowy-white on some parts; they have the tail deeply forked, the tarsi nearly naked, and the bill at a maximum of size and curvature. Other species, forming the subgenus or genus *Tapera* of Bonaparte (1857; = *Phœoprogne* Baird, 1865), are plain mouse-brown above, with merely emarginate tail, weaker and more depressed bill, and the tarsus feathered along the inner side for two-thirds its length.

The whole group is confined to America, and the species of *Tapera* are exclusively South American. The "Purple" Martins range over both divisions of the hemisphere, and one of them is very common in the United States. In this species, and its immediate allies, the adult male is uniform glossy blue-black, with various reflections. In others, of the *dominicensis* style, the belly and crissum are snow-white. The species to be recognized become uncertain if we attempt to push our discriminations to the lengths that some authors have done.

The Purple Martin

Progne subis*

Hirundo subis, *L.* SN. i. 10thed. 1758, 192, n. 6 (from Edw. 120).—*L.* SN. i. 12th ed. 1766, 344, n. 7.—*Bodd.* Tabl. PE. 1783, 45, pl. 722.—*Gm.* SN. i. 1788, 1021, n. 7 (*H. freti-hudsonis* Briss.; *Hirondelle de la Baie d'Hudson* Buff.).—*Turt.* SN. i. 1806, 629.

Progne subis, *Bd.* Rev. AB. 1865, 274.—*Coues,* Pr. Phila. Acad. 1866, 72 (Arizona).—*Coues,* Pr. Bost. Soc. xii. 1868, 111 (South Carolina).—*Coues,* Pr. Ess. Inst. v. 1868, 276.—*Turnb.*

* The Cuban bird, also attributed to Florida, and probably identical with the ordinary North American species, is:—

Progne purpurea, *D'Orb.* Ois. Cuba, 1839, 94.—*Gundl.* J. f. O. 1856, 3.—*Thienem.* J. f. O. 1857, 149 (egg).—*Brew.* Pr. Bost. Soc. vii. 1860, 306.—*Gundl.* J. f. O. 1861, 328.

Progne ——, *Bd.* BNA. 1858, 923 (Florida).

Progne cryptoleuca, *Bd.* Rev. AB. 1865, 277.—*Gundl.* J. f. O. 1872, 431.

Progne subis *var.* **cryptoleuca,** *B. B. & R.* NAB. i. 1874, 332 (Cuba, Florida?, and Bahamas?).

Hirondelle bleue, *D'Orb.* l. c.

Cuban Martin, *B. B. & R.* l. c.

Other references to the same or a very closely allied bird of South Amer-

B. E. Pa. 1869, 20; Phila. ed. 13.—*Sumich.* Mem. Bost. Soc. i. 1869, 547 (Orizaba).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 370.—*Scott*, Pr. Bost. Soc. xv. 1872, 223.—*Allen*, Am. Nat. vi. 1872, 267.—*Ridgw.* Bull. Ess. Inst. v. 1873, 181 (Colorado).—*Allen*, Pr. Bost. Soc. xvii. 1874, 54 (Yellowstone River).—*Ridgw.* Am. Nat. viii. 1874, 199, 200.—*B. B. & R.* NAB. i. 1874, 320, pl. 16, figs. 7, 10.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 12.—*Hensh.* ibid. 1874, 42, 104.—*Hensh.* List B. Ariz. 1875, 156.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 213.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Ridgw.* Rep. Surv. 40th Par. iv. 1877, 439.

Progne subis, *Stev.* Ann. Rep. U. S. Geol. Surv. for 1870, 1871, 463.

Hirundo purpurea, *L.* SN. i. 1766, 344, n. 5 (from Cates. i. 51; Kalm, iii. 88; Briss. ii. 515).—*Gm.* SN. i. 1788, 1020, n. 5.—*Lath.* IO. ii. 1790, 578.—*Bart.* Trav. 1791, 292.—*Turt.* SN. i. 1800, 629.—*Wils.* "AO. v. 18—, 58, pl. 39, f. 2, 3".—*Steph.* Gen. Zool. x. 1817, 108.—*De Witt Clint.* Ann. Lyc. N. Y. i. 1824, 150.—*Aud.* Ann. Lyc. i. 1824, 167.—*Bp.* Journ. Phila. Acad. iv. 1825, 255.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 64.—*Sw. & Rich.* FBA. ii. 1831, 335.—*Aud.* OB. i. 1831, 115, pl. 23.—*Nutt.* Man. i. 1832, 598.—*Towns.* Journ. Phila. Acad. viii. 1839, 155.—*Aud.* Syn. 1839, 37.—*Aud.* BA. i. 1840, 170, pl. 45.—*Macg.* Man. Brit. Orn. i. 1840, 245!—*Giraud*, BLI. 1844, 34.—*Jones*, "Nat. in Berm. 34".—*Thomps.* Vermont, 1853, 97.—*Read*, Pr. Phila. Acad. 1853, 401.—*Wailes*, Rep Mississippi, 1874, 318.—*Henry*, Pr. Phila. Acad. 1855, 308 (New Mexico).—*Pratten*, Tr. Illinois Agric. Soc. 1855, 600.—*Haym.* Pr. Phila. Acad. 1856, 288.—*Putn.* Pr. Ess. Inst. i. 1856, 205.—*Maxim.* J. f. O. 1858, 100.—*Bland*, Smiths. Rep. for 1858, 1859, 287 (Bermuda).—*Willis*, Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).—*Martens*, J. f. O. 1859, 216 (Bermudas).—*Gosse*, Alabama, 1859, 195.—*Gieb.* Vög. 1860, 74, pl. 137.—*Trippe*, Pr. Ess. Inst. vi. 1871, 114.—*Hart.* Man. Brit. Birds, 1872, 125 (in two instances).

Progne purpurea, *Boie*, "Isis, 1826, 971".—*Bp.* CGL. 1838, 8.—*Boie*, Isis, 1844, 178.—*Bp.* CA. i. 1850, 337.—*Burnett*, Pr. Bost. Soc. iv. 1851, 116.—*Hoy*, Pr. Phila. Acad. 1853, 307.—*Brew.* Pr. Bost. Soc. iv. 1854, 325.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 581.—*Woodh.* Sitgr. Rep. 1853, 65.—*Bp.* Compt. Rend. xxxviii. 1854, 650 (California).—*Cass.* Illust. 1855, 245.—*Newb.* PRRR. vi. 1857, 79.—*Brew.* N. Am. Oöl. 1857, 103, pl. 4, f. 47.—*Bd.* BNA. 1858, 314.—*Bd.* Pr. Phila. Acad. 1859, 303 (California).—*Xant.* Pr. Phila. Acad. 1859, 191 (California).—*Henry*, Pr. Phila. Acad. 1859, 106 (New Mexico).—*Heerm.* PRRR. x. 1859, 35.—*Coop. & Suckl.* NHWT. 1860, 186.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 364.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 409.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 162.—*Verr.* Pr. Ess. Inst. iii. 1862, 148.—*Boardm.* Pr. Bost. Soc. ix. 1862, 125.—*Blakist.* Ibis, 1862, 4; 1863, 65 (Saskatchewan).—*Allen*, Pr. Ess. Inst. iv. 1864, 66.—*Coues*, Ibis, 1865, 163 (Arizona).—*Dress.* Ibis, 1865, 479 (Texas).—*Hoy.* Smiths. Rep. for 1864, 1865, 437.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*McIlwr.* Pr. Ess. Inst. v. 1866, 87 (Canada West).—*Degl.-Gerbe*, OE. i. 1867, 594 (Europe).—*Coop.* B. Cal. i. 1870, 113.—*Coues*, Pr. Phila. Acad. 1871, 21.—*Bruhin*, Zool. Gart. 1871, 14 (Wisconsin).—*Coues*, Key, 1872, 114.—*Trippe*, Pr. Bost. Soc. xv. 1873, 235.—*Kirtl.* Pr. Cleveland Acad. 1874, 273.—*Coop.* Am. Nat. viii. 1874, 17.—*Coues*, BNW. 1874, 91.—*Gentry*, Life-Hist. 1876, 199.—*Minot*, BNE. 1877, 150.

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ica will be found in my BNW. p. 91, and in Baird, Brewer and Ridgway's Hist. NAB. i. p. 328.

The *Progne dominicensis* of authors differs decidedly in the white crissum. It has the following synonymy:—

Grand Martinet noir et blanc, [*or* **à ventre blanc**], *Buf.* "vi. 669".

Hirondelle d'Amérique, *Buff.* PE. 545, f. 1.

Hirondelle de S. Domingue, *Briss.* Orn. ii. 1760, 493, n. 3.

Hirundo dominicensis, *Briss.* l. c.—*Gm.* SN. i. 1788, 1025.—*V.* "OAS. i. 1807, 59, pls. 28, 29" (St. Domingo).—*? Jard.* "Ann. Mag. N. H. xviii. 1846, 120" (Tobago).—*Tayl.* Ibis, 1864, 166 (Porto Rico).

Progne dominicensis, *Boie*, "Isis, 1826, 971; 1844, 178".—*Gosse*, B. Jam. 1847, 69.—*Bp.* CA. i. 1850, 337.—*Scl.* PZS. 1857, 201; 1859, 364; 1860, 292.—*? Salv.* Ibis, 1859, 466.—*? S. & S.* Ibis, 1859, 13.—*? Tayl.* Ibis, 1860, 110.—*Sel.* Cat. AB. 1861, 38.—*March*, Pr. Phila. Acad. 1863, 295 (Jamaica).—*Bd.* Rev. AB. 1865, 279.—*B. B. & R.* NAB. i. 1874, 328.

Hirundo albiventris, *V.* N. D. d'H. N. xiv. 1817, 533.—*V.* Ency. Méth. ii. 1823, 531, n. 49 (ascribed to North America).

St. Domingo Swallow, *Lath.* Syn. ii. pt. ii. 1783, 573, n. 18.

Hirondelle à ventre blanc, *V.* l. c. 1823.

Hirundo vio acea, *Gm.* SN. i. 1788, 1026 (Buff. vi. 674; PE. 722; Lath. ii. pt. ii. 574, n. 21).—*Turt.* SN. i. 1806, 632.—*Less.* "Compl. Buff. viii. 498".
Cecropis violacea, *Boie,* Isis, 1828, 316.
Hirundo cærulea, *V.* OAS. i. 1807, 57, pls. 26, 27.—*Less.* Tr. Orn. 1831, 269.
Hirundo versicolor, *V.* "N. D. d'H. N. xiv. 1817, 509".—*V.* EM. ii. 1823, 522, n. 17.
Hirundo ludoviciana, *Cuv.* "RA. i. 1817, 374".
Purple Martin, Hirundo purpurea, *Cates.* Car. i. 1771, 51, pl. 51.
Martinet de la Caroline, Hirundo apos carolinensis, *Briss.* Orn. ii. 1760, 515, n. 17 (quotes Cates. 51).
Martinet couleur de pourpre, *Buff.* "vi. 676".
Purple Swallow, *Lath.* Syn. ii. pt. ii. 1783, 575, n. 23.
Purple Swift, *Penn.* AZ. ii. 1785, 431, n. 333.
Great American Martin, *Edw.* pl. 120. (Basis of *H. subis* L. 1758.)
Hirondelle de la Baye de Hudson, Hirundo freti-hudsonis, *Briss.* Orn. vi. 1760, App. 56, n. 18 (quotes Edw. pl. 120, and *H. subis* L.).—*Buff.* "vi. 677".
Canada Swallow, *Lath.* Syn. ii. pt. ii. 1783, 575, n. 24 (= *subis* L.).
Hirondelle bleue de la Louisiane, *Buff.* vi. 674 (PE. 722).—*V.* l. c. 1823.
Violet Swallow, *Lath.* Syn. ii. pt. ii. 1783, 574, n. 21 (quotes PE. 722, and Buff. vi. 674. Louisiana).
Hirondelle bleue, *Le Moine,* Ois. Canad. 1861, 146.
Progné pourpre, *Degl.-Gerbe,* l. c.
Purpurschwalbe, German.

HAB.—North America, to within the Arctic circle, breeding throughout this range, wintering extralimital. Bermuda. Mexico and Lower California. Accidental in Europe.

CH. SP.— ♂ *Chalybeus; alis caudâque nitenti-nigricantibus.* ♀ *Chalybeo-fuscus, alis caudâque fuscis, infrà ex fusco albidus.*

♂: Intense lustrous steel-blue. Wings and tail blackish, with bluish lustre. Bill black; feet blackish. Length, 7¼ inches; extent, 15½; wing, 5½–6; tail, 3–3½, forked; bill, ½, very stout, broad at the base, somewhat decurved at the end; nostrils circular, exposed, opening upward.

♀: Dark grayish-brown, glossed on the back and head with steel-blue. Wings and tail fuscous, paler on the inner webs, with narrow gray edgings. Beneath, whitish, shaded with dark gray in most parts, the feathers very generally with dusky shaft-line.

Young birds of both sexes resemble the adult female, though the young males are rather darker. The steel-blue appears at first in patches.

THE question of the winter retreat of the Purple Martin is still open, and not likely to be decided till we come to some better understanding of the several whole-colored species of *Progne* now recognized as inhabiting Middle and South America. No bird of the United States is better known; no one is more positively ascertained to leave us in the fall and return in the spring; millions of Martins are bred every year in North America, and yet I find no unequivocal recognition by late writers of Purple Martins beyond the United States, excepting in Bermuda, Mexico, and Lower California. It is true, we have plenty of references to "purpurea" as a Central and South American bird; but the present technical aspects

of the case obscure the whole subject. It may be roundly asserted that we have yet to discover where the great mass of Martins bred each year in the United States stay in winter. Our birds are known to come over our border very early in the spring or in February, and gradually spread over the country, reaching the highest latitudes by the middle or latter part of May. Such early appearance subjects them to painful vicissitudes of the weather, large numbers having been known to perish in sudden storms or cold snaps. The return movement is less regular; it begins early, in August as a rule, but is not finished for a month or more. The breeding range of the species coincides with the whole distribution in North America wherever suitable nesting-places can be found, and the bird is moreover resident in some portions.

But I need not enter upon the full history of so very familiar a bird. Its natural nesting places are hollows of trees and rocks; the martin-box, or its equivalent, is an innovation to which these progressive birds take very kindly, and hardly any other way of nesting is known in populous districts, where the Martin rivals the Barn and Eave Swallow in domesticity, and surpasses the White-bellied by a long interval. In the West, the case is different, or was when I studied Martins in the then wilderness of Arizona. At Fort Whipple, these birds were very abundant summer residents of that pine-girdled locality, arriving early in April, and taking leave late in September. They lived in colonies, and had their being in what might be called martin-houses, made by very industrious and skilful *carpinteros*—the Woodpeckers. Many a towering pine was dead at the top, like a senile ornithologist whose body had outlived his head, and stood the picture of grotesque despair, with a load of useless lumber in the upper story. Hither came the Woodpeckers—especially Lewis's and the *formicivorus*—to build baby-houses, like children trooping into the garret. No more eligible martin houses could be found than such honeycombed shafts, and the birds knew it. Many such picturesque establishments were fully tenanted by numerous pairs of Martins, who did not seem to confine themselves to deserted Woodpeckers' holes. When once a settlement was effected, the Woodpeckers, who might be inclined to occupy some of their own premises, had notice to quit, and they generally governed themselves accordingly. Peace at any price seemed to be their shrewd conclusion; for though they might manage to live, as

a philosopher did with Xantippe, it was not worth while to quarrel forever with these energetic and voluble birds, and suffer for their sense of right. So the Martins had it all their own way; and they might be seen roosting on the ends of the blasted boughs, with the nervous quiverings so characteristic of the tribe, during which their burnished plumage glittered in the sun, or more deliberately preening their feathers, making the elaborate toilet required to free themselves from some of their little guests, or sallying with redoubled volubility after some Hawk or Raven that ventured too near their metropolis. They added much to the life of these sombre and treacherous woods, where danger lurked in the very air at the time of which I write, and the thickets screened many an atrocity from the light of day. The later Arizonian, no doubt, will find the Woodpeckers in undisputed possession of such trees as his ax may spare, while the garrulous Martins cluster round his dwelling. If he be fond of a morning nap, it may occur to him that Tereus, though a reprobate, was not such a bad fellow after all; and he may enquire again, between two yawns—

> "Quid matutinos *Progne* mihi garrula somnos
> Rumpis, et obstrepero Daulias ore canis?
> Dignus epops Tereus, qui maluit ense putare
> Quam linguam immodicam stirpitus eruere."

NOTES TO THIS CHAPTER

I.

The following Swallows, ascribed to North America, have not been satisfactorily identified:—

1. **Hirundo unalaschkensis,** *Gm.* SN. i. 1788, 1025, n. 30 (from *Aoonalashka Swallow* of Lath. Syn. ii. pt. ii. 571, n. 15).—*V.* "OAS. i. 1807, 64".—*Steph.* Gen. Zool. x. 1817, 117.—*Cass.* Illust. 1855, 250.
   Hirundo aoonalaschkensis, *Lath.* IO. ii. 1790, 577, n. 15.
   Hirundo aoonalashkensis, *Turt.* Syst. Nat. i. 1806, 631.
   Hirundo aoonalaskensis, *V.* EM. ii. 1823, 526.
   Chelidon unalaschkensis, *Boie,* Isis, 1844, 171.
   Aoonalashka Swallow, *Lath.* Syn. ii. pt. ii. 1783, n. 15 (orig. descr. Mus. Lev.).
   Aoonalaschkan Swallow, *Steph.* l. c.
   Hirondelle d'Ounalaska, *V.* l. c.
2. **Hirundo phenicephala,** *Raf.* Annals of Nature, 1820, 4 (Lexington, Ky.). (See especially Cassin, Illust. p. 251.)
3. **Hirundo cinerea,** *Ord,* Guthrie's Geogr. 2d Am. ed. ii. 1815, 317 (*descr. nulla*). (See Cassin, *op. cit.* 252.)
4. **Hirundo rupestris,** *Ord,* Guthrie's Geogr. 2d Am. ed. ii. 1815, 317 (*descr. nulla*). (See Cassin, *l. c.*)

II.

*Hirundo horreori-lunifrons.**—In the July number of the Bulletin of the Nuttall Ornithological Club, received just too late to make use of in the proper connection, Mr. Spencer Trotter describes a remarkably interesting Swallow, determined to be a hybrid between *Hirundo horreorum* and *Petrochelidon lunifrons*. The specimen, shot at Linwood, Delaware County, Pa., May 22, 1878, by Mr. C. D. Wood, "has been examined by several competent ornithologists, who all pronounce its hybrid nature as unquestionable"; and the description given by Mr. Trotter would seem to warrant such conclusion. Above, the bird is *H. horreorum* throughout, excepting the grayish-fulvous rump; below, it has the black throat-spot and general color of *P. lunifrons*. The bill is rather thicker, the feet are stronger, and the tarsi more feathered than in *H. horreorum;* the tail is shorter than in that species, less deeply forked, with less attenuated outer feathers, and with the white spots not so well marked.—Hybridity is very seldom observed among the Swallows, and this is the first recorded instance of its occurrence in this country. It has, however, been noted in the case of the European *Hirundo rustica* × *Chelidon urbica:* see *Gloger*, Vögel Europas, i. 417; and *Sundevall*, Öfvers. Kongl. Vetensk.-Akad. Förh. för år 1845, p. 128.

III.

A correction.—At pp. 394, 395, I have quoted some remarks made by Dr. Brewer on the improvement in the architecture of the European House Martin, *Chelidon urbica*. It appears from a note recently published by this writer† that no such improvement as was alleged has occurred, the nest that is now so well built being that of *Hirundo rustica*, while that of the Martin continues the same.

* 1878. TROTTER, S. Description of a Hybrid (Hirundo horreori-lunifrons) between two North American Swallows. < *Bull. Nutt. Ornith. Club*, iii. no. 3, July, 1878, pp. 135, 136.

† 1878. BREWER, T. M. [Correction of his error respecting nidification of Chelidon urbica (Amer. Nat. Jan. 1878).] < *Amer. Nat.* xii. no. 3, May, 1878 (pub. about Apr. 19, 1878), p. 336.

FIG. 48.—The Crescent Swallow. (See p. 426.)

CHAPTER XV.—WAXWINGS

FAM. AMPELIDÆ

As I observed in 1872, this appears to be an arbitrary and unnatural association of a few genera that agree in some particulars, but are widely different in others. Hardly any writers are agreed upon the composition of the group, or the disposition to be made of it in the series. It has been made to cover the *Myiadestinæ*, *Ptilogonydinæ*, *Dulinæ*, and *Ampelinæ;* but the first-named I have already removed to the *Turdidæ*, the third may be a Vireonine, and the other two do not seem to be specially related. Under these circumstances, I do not attempt to define the group.

The two genera which I shall treat here are *Ampelis* and *Phœnopepla*, each representing one of the more isolated forms of American *Passeres*. *Ampelis* stands quite alone, doubtless typical of a subfamily at least. *Phœnopepla* is closely related to the exotic *Ptilogonys*,—though not particularly near our *Myiadestes*, which it will be remembered used to be called *Ptilogonys*.

Genus AMPELIS Linnæus

Ampelis, *Linn.* SN. 1735–1766. Type *Lanius garrulus.*
Bombycilla, *Briss.* 1760.—*Vieill.* Ois. Am. Sept. i. 1807, 88. Type *B. cedrorum.*
Bombyciphora, *Meyen,* "—, 1810, —" (*fide* Gray).
Bombycivora, *Temm.* "—, 1815, —" (*fide* Gray).
Lanius p., *Linn.*
Corvus p., *Illiger,* 1811.

CHARS.—Bill short, broad, flat, rather obtuse, plainly notched near tip of each mandible, with wide and deeply cleft gap, the convex culmen and gonys less than half as long as the nearly straight commissure, the width of rictus more than two-thirds the length of the gape. Nasal fossæ broad, but filled with short, erect, or antrorse and close-set velvety feathers; nostrils narrowly elliptical, overarched by a (feathered) scale. Rictal vibrissæ few and short. Wings long and pointed, much longer than the tail, their point formed by the 3d primary, closely supported by the 2d and 4th, the 5th abruptly shorter and the rest rapidly graduated. Primaries 10, but the 1st spurious, so very short as readily to escape observation, and sometimes displaced to the outer side of the 2d primary—a condition like that seen

among the Vireos. Inner quills, as a rule, and sometimes the tail-feathers, tipped with curious red, horny appendages, like sealing-wax. Tail short, narrow, even, two-thirds or less of the length of the wing. Feet rather weak; tarsus shorter than the middle toe and claw, distinctly scutellate with five or six divisions anteriorly and somewhat receding from strict Oscine character by subdivision of the lateral plates. Lateral toes of nearly equal lengths, the ends of their claws scarcely reaching the base of the middle claw; hallux about as long as the inner lateral toe. Basal phalanx of middle toe coherent with outer toe for about two-thirds its length, with inner toe for about half its length. Body stout. Head conspicuously crested. Plumage peculiarly soft, smooth, and silky. Tail tipped with yellow (or red). Sexes alike; young different. Eggs spotted. Nest on trees.

This notable genus consists of three species: *A. garrulus*, of the northerly parts of the Northern Hemisphere; *A. carolinensis*, of America; and the Japanese *A. phœnicoptera*, in which the tail is tipped with red instead of yellow. The first-named is celebrated for its nomadic disposition, whence its *soubriquet* "Bohemian". The general traits and habits of the two American species are much the same, and very strongly pronounced. They are insectivorous and frugivorous, gregarious and irregularly migratory, and remarkably silent birds to be called "Chatterers", having only a weak and wheezy voice. The disposition to be made of the genus is uncertain; Baird has called attention to the resemblance in many respects between *Ampelis* and *Progne*, adding that it would not be surprising if these genera should be more closely associated by authors than has hitherto been the case.

The "sealing-wax" tips have been subjected to chemical and microscopical examination by L. Stieda (Arch. Mikr. Anat. 1872, 639), and shown to be the enlarged, hardened, and peculiarly modified prolongation of the shaft itself of the feather, composed of central and peripheral substances differing in the shape of the pigment-cells, which contain abundance of red and yellow coloring matter.

Besides occupying due place in unnumbered systematic and faunal publications, the birds of this genus, and especially *A. garrulus*, have occasioned some literature of their own, the following fragment of which is offered as a contribution to the bibliography of this particular subject:—

Special Bibliography of the genus Ampelis

1825. ———. De Historiæ Naturalis in Japonia Statu, . . . [M. de Siebold]. Batavia 1824. < *Férus. Bull.* 2e sec. iv. 1825, pp. 86–88.

Editorial notice of the work, only ornithological in giving description of *Bombycivora japonica.*

1827. ———. De Historiae naturalis in Japonia statu, nec non de augmento emolumentisque in decursu perscrutationum exspectandis Dissertatio, cui accendunt spicilegia faunae Japonicae, auctore P. F. de Siebold, Med. Doct. complurium societatum membro. Bataviae 1824. < *Oken's Isis*, Bd. xx. 1827, pp. 135–143.

Editorial notice of the work, only ornithological in reproducing the original description of *Bombycivora japonica*, p. 141.

1831. Bree, W. T. The Waxen or Bohemian Chatterer [Ampelis garrulus in Warwickshire]. < *Loudon's Mag. Nat. Hist.* iv. 1831, pp. 164, 165.

1836. Brown, J. S. The Bohemian Waxwing [Ampelis garrulus]. < *Loudon's Mag. Nat. Hist.* ix. 1836, p. 201.

1843. Jordan, W. R. H. Note on the occurrence of the Bohemian Chatterer [Bombycilla garrula] near Teignmouth. < *Zoologist*, i. 1843, p. 188.

1844. Sladen, E. H. M. Note on the occurrence of the Waxen Chatterer [Bombycilla garrula] in Sussex. < *Zoologist*, ii. 1844, p. 762.

1845. Norman, G. Occurrence of the Waxen Chatterer [Ampelis garrulus] near Hull. < *Zoologist*, iii. 1845, p. 871.

1845. Storer, D. H. [Occurrence of Bombycilla garrula in Ohio in July.] < *Proc. Bost. Soc. Nat. Hist.* ii. 1845, p. 52.

1847. Bird, W. F. W. Capture of the Bohemian Waxwing [Bombycilla garrula] in Bedfordshire. < *Zoologist*, v. 1847, p. 1777.

1848. Bold, T. J. Occurrence of the Bohemian Waxwing [Bombycilla garrula] near Newcastle-on-Tyne. < *Zoologist*, vi. 1848, p. 2019.

1848. Bold, T. J. Occurrence of the Bohemian Waxwing (Bombycilla garrula) at Earsdon, Northumberland. < *Zoologist*, vi. 1848, p. 2064.

1848. Johnson, F. W. Occurrence of the Bohemian Waxwing [Bombycilla garrula] in Suffolk. < *Zoologist*, vi. 1848, p. 2064.

1848. Strangeways, R. Occurrence of the Bohemian Waxwing [Bombycilla garrula] near Yarmouth. < *Zoologist*, vi. 1848, p. 2064.

1850. Amherst, F. H. Occurrence of the Bohemian Waxwing [Bombycilla garrula] near Coventry. < *Zoologist*, viii. 1850, p. 2799.

1850. Barclay, H. Occurrence of the Waxwing [Bombycilla garrula] at Walthamstow. < *Zoologist*, viii. 1850, pp. 2767, 2768.

1850. Bold, T. J. Occurrence of the Waxwing [Bombycilla garrula] in Northumberland and Durham. < *Zoologist*, viii. 1850, p. 2768.

1850. Bond, F. Occurrence of the Waxwing [Bombycilla garrula] in Cambridgeshire and Norfolk. < *Zoologist*, viii. 1850, p. 2767.

1850. Bond, W. Occurrence of the Waxwing [Bombycilla garrula] in Leicestershire. < *Zoologist*, viii. 1850, p. 2770.

1850. Borrer, W., Jr. Occurrence of the Waxwing [Bombycilla garrula] near Horsham. < *Zoologist*, viii. 1850, p. 2799.

1850. Burroughes, T. H. Occurrence of the Waxwing [Bombycilla garrula] in Norfolk. < *Zoologist*, viii. 1850, p. 2767.

1850. Curtler, M. Occurrence of the Waxwing [Bombycilla garrula] near Worcester. < *Zoologist*, viii. 1850, p. 2768.

1850. Duff, J. Occurrence of the Waxwing (Bombycilla garrula) in England. < *Zoologist*, viii. 1850, p. 2766.

1850. Ellman, J. B. Occurrence of the Waxwing [Bombycilla garrula] at Piddinghoe. < *Zoologist*, viii. 1850, p. 2768.

1850. Ellman, J. B. Occurrence of the Waxwing [Bombycilla garrula] at Pevensey, Sussex. < *Zoologist*, viii. 1850, p. 2768.

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1850. Gordon, G. Occurrence of the Waxwing [Bombycilla garrula] in various localities in Scotland. < *Zoologist*, viii. 1850, pp. 2769, 2770.

1850. Grey, J. Occurrence of the Waxwing [Bombycilla garrula] near Stockton-on-Tees. < *Zoologist*, viii. 1850, p. 2768.

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1850. Hepburn, A. Occurrence of the Waxwing [Bombycilla garrula] in Scotland. < *Zoologist*, viii. 1850, p. 2767.

1850. Hodgkinson, J. B. Occurrence of the Waxwing [Bombycilla garrula] near Preston. < *Zoologist*, viii. 1850, p. 2768.

1850. Hulke, J. W. Occurrence of the Waxwing [Bombycilla garrula] near Deal. < *Zoologist*, viii. 1850, p. 2767.

1850. Johnson, H. Occurrence of the Waxwing [Bombycilla garrula] and Black Redstart (Sylvia Tithys) near Liverpool. < *Zoologist*, viii. 1850, p. 2769.

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1850. Newman, E. Occurrence of the Waxwing [Bombycilla garrula] near London, &c. < *Zoologist*, viii. 1850, p. 2769.

1850. NEWMAN, E. Occurrence of the Bohemian Waxwing [Bombycilla garrula] near London. < *Zoologist*, viii. 1850, p. 2767.

1850. NEWTON, A. Occurrence of the Waxwing [Bombycilla garrula] in Norfolk, Suffolk, Cambridgeshire, and Cornwall. < *Zoologist*, viii. 1850, p. 2769.

1850. NICHOLLS, H. Occurrence of the Waxwing [Bombycilla garrula] near Kingsbridge. < *Zoologist*, viii. 1850, p. 2767.

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1851. SMITH, J. Observations on the [habits, etc. of the] Waxwing (Bombycilla garrula). < *Zoologist*, ix. 1851, pp. 3049–3053.

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1857. D'URBAN, W. S. M. Notice of the Occurrence of the Pine Grosbeak and Bohemian Chatterer, near Montreal. < *Canad. Nat. & Geol.* i. 1857, pp. 465–472, fig.

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1857. WOLLEY, J. On the Nest and Eggs of the Waxwing (Bombycilla garrula, Temm.) < *P. Z. S.* xxv. 1857, pp. 55–57, pl. (Aves) cxxii.

This is the original article on this notable discovery; it includes description of the nestling, and accounts of the nests and eggs of two species of Strigidæ.

1857. WOLLEY, J. On the Nest and Eggs of the Waxwing (Bombycilla garrula, Temm.). < *Ann. Mag. Nat. Hist.* (2), xx. 1857, pp. 308–310.

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1858. BALDAMUS, E. Zur Naturgeschichte von Bombycilla Garrulus. < *Naumannia*, viii. 1858, pp. 498–504.

1858. HARTLAUB, G. Beilage Nr. 4. < *Naumannia*, viii. 1858, pp. 199–201, hierzu Taf. —, figg. 5–8.

Eier von Bombycilla garrula (Taf.).—Vögel im zoologischen Garten zu London.

1858. NORDMANN, A. VON. Zur Fortpflanzungsgeschichte des Seidenschwanzes, (Bombycilla garrulus,) und über einige andere Vögel Finnlands. (Mit Zusätzen von Dr. C. Gloger.) < *J. f. O.* vi. 1858, pp. 307–311, Taf. i. Fig. *a* und *b*.

1859. ANDERSÉN, C. H. Om de lackröda spetsarne på armpennorna hos sidensvansen [Ampelis garrulus]. < *Öfvers. Kongl. Vetensk.-Akad. Förh. för år* 1859, pp. 219–231, pl. ii.

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1861. NEWTON, A. Particulars of Mr. J. Wolley's Discovery of the Breeding of the Waxwing (Ampelis garrulus, Linn.). < *Ibis*, iii. 1861, pp. 92–106, pl. iv (5 vars. of eggs figured).

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Extract from the *Ibis*, Jan. 1861.

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1864. CHAPMAN, T. The Bohemian Waxwing [Bombycilla garrula] on the West Coast of Argyllshire. < *Zoologist*, xxii. 1864, p. 8881.

1864. COOKE, N. Bohemian Waxwing [Bombycilla garrula] near Liscard. < *Zoologist*, xxii. 1864, pp. 9023, 9024.

1864. COOPER, J. Waxwings [Bombycilla garrula] near Warrington. < *Zoologist*, xxii. 1864, p. 8883.

1864. DOBRÉE, N. F. Waxwings [Bombycilla garrula] near Hull. < *Zoologist*, xxii. 1864, p. 8880.

1864. M'LEAY, W. Waxwing [Bombycilla garrula] in Aberdeenshire. < *Zoologist*, xxii. 1864, p. 8881.

1864. MEYER, R. Auftreten von Seidenschwänzen [Ampelis garrulus] in der Gegend von Offenbach. < *Zool. Gart.* v. 1864, pp. 158, 159.

1864. OSBORNE, H., JR. Waxwing [Bombycilla garrula] at Wick. < *Zoologist*, xxii. 1864, pp. 8880, 8881.

1864. REIFF, F. Fortpflanzung des Seidenschwanzes [Ampelis garrulus]. < *Zool. Gart.* v. 1864, pp. 126, 127.

1864. ROUNDELL, H. Bohemian Waxwing [Bombycilla garrula] in the West Riding of Yorkshire. < *Zoologist*, xxii. 1864, p. 9023.

1864. SAVILLE, S. P. The Waxwing [Bombycilla garrula] in Norfolk. < *Zoologist*, xxii. 1864, p. 8950.

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1867. ALTUM, B. [Das Erscheinen des Seidenschwanzes (Ampelis garrulus) bei Münster, Dec. 1866.] < *Zool. Gart.* viii. 1867, p. 197.

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1867. BRUCKLACHER, G. Das Erscheinen des Seidenschwanzes (Bombycilla Garrula) bei Freudenstadt, 1866–7. < *Zool. Gart.* viii. 1867, p. 197.

1867. CLARK-KENNEDY, A. Waxwings [Bombycilla garrula] near Woolwich. < *Zoologist*, 2d ser. ii. 1867, p. 561.

1867. Garrett, G. Bohemian [Bombycilla garrula] Waxwing at Witheringsett, Suffolk. < *Zoologist*, 2d ser. ii. 1867, p. 633.

1867. Girtanner, [A.] [Das Erscheinen des Seidenschwanzes (Bombycilla Garrula) bei St. Gallen.] < *Zool. Gart.* viii. 1860, pp. 159, 160, 280.

1867. Gunn, T. E. Bohemian Waxwing [Bombycilla garrula] in Norfolk and Suffolk. < *Zoologist*, 2d ser. ii. 1867, p. 633.

1867. Herpell, G. [Das Erscheinen des Seidenschwanzes (Bombycilla Garrula) bei St. Goar am Rhein.] < *Zool. Gart.* viii. 1867, p. 159.

1867. Newman, E. Visit of the Bohemian Waxwing [Bombycilla garrula, in Essex]. < *Zoologist*, 2d ser. ii. 1867, pp. 560, 561.

1867. Newman, E. Waxwings [Bombycilla garrula, in Norfolk]. < *Zoologist*, 2d ser. ii. 1867, p. 561.

1867. Schmidt, Max. Eine Anzahl Seidenschwänze (Bombycilla garrulus). < *Zool. Gart.* viii. 1867, pp. 29, 30.

1867. [Anon.] Bohemian Waxwing [Bombycilla garrula] in Somersetshire. < *Zoologist*, 2d ser. ii. 1867, p. 633.

From the *Field*, Jan. 12.

1867. [Anon.] Bohemian Waxwing [Bombycilla garrula] near Whitby. < *Zoologist*, 2d ser. ii. 1867, p. 633.

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1867. [Anon.] Bohemian Waxwing [Bombycilla garrula] at Vienna. < *Zoologist*, 2d ser. ii. 1867, p. 704.

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1868. Howlett, W. Bohemian Waxwing [Bombycilla garrula] at Newmarket. < *Zoologist*, 2d ser. iii. 1868, p. 1132.

1868. Hufnagel, —. [Vorkommen des Seidenschwanzes in den Nadelholzwaldungen dem Riess benachbarten Gegend.] < *Zool. Gart.* ix. 1868, pp. 113, 114.

1868. Mosley, O. Nidification of the Bohemian Waxwing [Bombycilla garrula] in England [!?]. < *Zoologist*, 2d ser. iii. 1868, p. 1294.

1868. Neave, E. Bohemian Waxwing [Bombycilla garrula] at Leiston, Suffolk. < *Zoologist*, 2d ser. iii. 1868, p. 1097.

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Etymological, with an account of the peculiar method of hunting the birds.

1871. Abbott, T. W. Waxwings [Bombycilla garrula] at West Hartlepool. < *Zoologist*, 2d ser. vi. 1871, pp. 2805, 2806.

1871. Gillman, H. Cedar Bird [Ampelis cedrorum] with Waxen Appendages on the Tail. < *Am. Nat.* iv. 1871, p. 692.

1871. Hocker, J. Ueber das Nisten der Seidenschwänze [Ampelis garrulus] in Deutschland. < *J. f. O.* xix. 1871, pp. 151, 152.

1872. BOYES, F. Waxwings [Bombycilla garrula] in East Yorkshire. < *Zoologist*, 2d ser. vii. 1872, p. 29 3.

1872. STIEDA, L. Ueber den Bau der rothen Blättchen an den Schwingen des Seidenschwanzes. < *Arch. Mikrosk. Anat.* 1872, p. 639.

Abstract by E. Coues in *New York Independent*, Aug. 12, 1875.

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1873. [ANON.] Bohemian Waxwings [Bombycilla garrula] near Pickering. < *Zoologist*, 2d ser. viii. 1873, p. 3452.

From *Leeds Mercury*, Feb. 9, 1873.

1873. HÜGEL, A. VON. Waxwing [Bombycilla garrula] in Hampshire. < *Zoologist*, 2d ser. viii. 1873, p. 3368.

1873. MATHEW, M. A. Bohemian Waxwing [Bombycilla garrula] at Bishop's Lydeard. < *Zoologist*, 2d ser. viii. 1873, p. 3452.

1873. MATHEW, M. A. Waxwings [Bombycilla garrula] at Bishop's Lydeard. < *Zoologist*, 2d ser. viii. 1873, p. 3490.

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Observations at Camp Harney, Oregon.

1877. HATCH, P. L. The Waxwing [Ampelis garrulus]. < *Forest and Stream*, viii. Mar. 1, 1877, p. 50.

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The Bohemian Waxwing

Ampelis garrulus

Ampelis garrulus, *L.* SN. i. 10th ed. 1758, n. 10 (Fn. Svec. 179).—*L.* SN. i. 12th ed. 1766, 297, n. 1.—*Bodd.* Tabl. PE. 1783, 16, pl. 261.—*Gm.* SN. i. 1788, 838, n. 1.—*Lath.* IO. i. 1790, 363, n. 1.—*Turt.* SN. i. 1806, 511.—*Fox*, Newc. Mus. 1827, 58.—*Bp.* CA. i. 1850, 336.—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Bd.* BNA. 1858, 307, 923 (Fort Riley, Kans., and "millions" on Powder River).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 374 (Northern Ohio, winter, frequent).—*Coop.* Pr. Cal. Acad. ii. 1861, 122 (Fort Mojave, Ariz., southernmost record).—*Newt.* Ibis, 1861, pp. 92–106, pl. 4 (eggs; first authentic).—*Gloger*, J. f. O. 1861, 280 (history—from Meves).—*Albrecht*, J. f. O. 1861, 132 (breeding, from Newton).—*Verr.* Pr. Ess. Inst. iii. 1862, 157 (Maine, in winter, rare or accidental).—*Boardm.* Pr. Bost. Soc. ix. 1862, 126 (Calais, Me.).—*Blakist.* Ibis, 1863, 65 (British America).—*R. Blas.* Beigabe J. f. O. 1863, 47 (Braunschweig).—*Allen*, Pr. Ess. Inst. iv. 1864, 66 (Springfield, Mass.; winter, accidental).—*McIlwr.* Pr. Ess. Inst. v. 1866, 87 (Canada West).—*Lawr.* Ann. Lyc. N. Y. ii. 1866, 285 (near New York City).—*Coues*, Pr. Phila. Acad. 1866, 71 (Arizona, *fide* Cooper).—*Degl.-Gerbe*, OE. i. 1867, 577.—*Coues*, Pr. Essex Inst. v. 1868, 276 (New England; rare and irregular in the north, casual in the south; Connecticut, *fide* Wood).—*v. Droste*, J. F. O. 1868, 38 (Borkum).—*Allen*, Am. Nat. iii. 1869, 579 (Southern New England).—*Coop.* Am. Nat. iii. 1869, 473.—*Turnb.* B. E. Pa. 1869, 53; Phila. ed. 42 (occasional near Philadelphia).—*Dall & Bann.* Tr. Chic. Acad. i. 1869, 280 (breeding on the Yukon).—*Mayn.* Nat. 1870, 107 (Massachusetts).—*Coop.* Pr. Cal. Acad. 1870, 75.—*Coop.* B. Cal. i. 1870, 127.—*Dall*, Am. Nat. iv. 1870, 600 (Alaska).—*Hart.* Man. Br. B. 1872, 23.—*Coues*, Key, 1872, 115, f. 55.—*Aiken*, Pr. Bost. Soc. xv. 1872, 198 (Colorado).—*Ridgw.* Bull. Ess. Inst. v. 1873, 181 (Colorado).—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 371 (Illinois).—*Swinh.* Ibis, 1874, 445 (Chefoo).—*Coues*, BNW. 1874, 91.—*Hancock*, B. Northumb. & Durh. 1874, 78.—*B. B. & R.* NAB. i. 1874, 396, pl. 18, f. 1.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 371 (Illinois).—*Hatch*,

Bull. Minn. Acad. 1874, 57 (Minnesota, Nov.–Feb.; sometimes numerous).—*Snow*, Cat. B. Kans. 3d ed. 1875, 5 (one, Fort Riley, Hammond; another, Ottawa, Nov. 1875, Wm. Wheeler).—*Wheat.* Rep. Ohio Agric. Soc. for 1874, 1875, 565 (Northern Ohio).—*Brew.* Pr. Bost. Soc. xvii. 1875, 440 (New England).—*Coop.* Pr. Cal. Acad. 1875, — (Mojave specimen confirmed).—*Hensh.* List B. Ariz. 1875, 157 (rests on Cooper's specimen).—*Minot*, BNE. 1877, 139.—*Merr.* Tr. Conn. Acad. iv. 1877, 32 (Connecticut, casual in winter).

Ampelis garrula, *Swinh.* PZS. 1863, 298 (China).—*Bd.* Rev. AB. 1866, 405, fig.—*v. Droste*, J. f. O. 1869, 112 (Färö).—*Swinh.* PZS. 1871, 374 (Northern China).—*Alston*, Ibis, 1873, 60 (Archangel).—*Swinh.* Ibis, 1873, 362 (Shanghai).—*Swinh.* Ibis, 1874, 158 (Hakodadi).

Bombycivora garrula, *Temm.* Man. i. "1815", 124; iii. 1835, 71.—*Naum.* Vög. Deutschl. ii. 1822, 143.

Bombycilla garrula, *Vieill.* Ency. Méth. ii. 1823, 766.—*Bp.* Ann. Lyc. N. Y. ii. 1826 (whole volume dated 1828), 438, n. 65 *bis.*—*Bp.* Zool. Journ. iii. 1827, 51, n. 65 *bis.*—*Bp.* Am. Orn. iii. 1828, —, pl. 16, f. 2.—*Less.* Tr. Orn. 1831, 367.—*S. & R.* FBA. ii. 1831, 237.—*Brehm*, Hdbh. Stub. Hausv. 1832, 292.—*Nutt.* Man. ii. 1834, 579.—*Bp.* CGL. 1838, 9.—*Aud.* OB. iv. 1838, 402, pl. 363 (Philadelphia, Long Island, Massachusetts).—*Peab.* Rep. Orn. Mass. 1839, 290 (Massachusetts, one instance).—*Aud.* Syn. 1839, 165.—*Macg.* Man. Br. Orn. i. 1840, 183.—*Keys. & Blas.* Wirb. Eur. 1840, 167.—*Aud.* BA. iv. 1842, 165, pl. 245.—*Giraud*, BLI. 1844, 165.—*Siedh.* Stubenv. Deutschl. 1845, 332.—*Storer*, Pr. Bost. Soc. ii. 1845, 52 (Ohio, in July).—*Brandt*, Anim. Vert. Sibérie, ——, 25.—*Degl.* OE. i. 1849, 349.—*Kjærb.* Naum. i. 1850, 41 (Denmark).—*Tobias*, Naum. i. 1851, 55 (Oberlausitz).—*Read*, Pr. Phila. Acad. 1853, 397 (Ohio).—*Hoy*, Pr. Phila. Acad. 1853, 381 (Wisconsin).—*Wentzel*, J. f. O. 1853, 433.—*Gloger*, J. f. O. 1854, 175.—*Vang.* J. f. O. 1855, 185.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 584 (Illinois).—*Müller*, J. f. O. 1856, 220 (Provence).—*Putn.* Pr. Ess. Inst. i. 1856, 228 (Massachusetts).—*Wolley*, PZS. 1857, 55, pl. 122 (nest and eggs—first authentic instance).—*Gade*, J. f. O. 1859, 436.—*Cab.* J. f. O. 1859, 80, pl. 1 (eggs).—*Maxim.* J. f. O. 1858, 189 (Upper Missouri River).—*Bolle*, J. f. O. 1859, 125 (Brandenburg).—*Holland*, J. f. O. 1859, 446.—*Preen*, J. f. O. 1859, 457.—*Dubois*, Rev. et Mag. de Zool. xii. 1860, 64, pl. 2, f. 4 (egg; name *B. cærulea* on plate).—*Gieb.* Vög. 1860, 79, f. 143.—*Zand.* Arch. Mecklenburg, xv. 1861, 61.—*Hintz I.* J. f. O. 1861, 229 (migrations).—*Radde*, Reisen, 1863, 200.—*Reiff*, Zool. Gart. v. 1864, 126 (breeding).—*Meyer*, Zool. Gart. v. 1864, 155.—*Holtz*, J. f. O. 1864, 220 (Neu-Vorpommern).—*Hintz I*, J. f. O. 1863, 414; 1864, 170; 1865, 88; 1866, 95; 1867, 156; 1868, 299 (Pomerania).—*Stricker*, Zool. Gart. ix. 1868, 222 (etymological).—*Homeyer*, J. f. O. 1869, 124 (Eastern Siberia).—*Tacz.* J. f. O. 1872, 442 (Siberia).—*Kneel.* Pr. Cleveland Acad. 1874, 276 (Ohio, frequent in winter).

Bombycilla garrulus, *Kaup*, Thierr. ii. pt. i. 1836, 173.—*Nordm.* J. f. O. 1858, 307 (breeding); 1864, 363 (Lapland).

Bombycilla cærulea, *Dubois*, Rev. Mag. Zool. xii. 1860, misprinted name on pl. 2.

Bombyciphora pallocœlia, *Meyer*, "Vög. Liv. u. Esthl. 1815, 104".

Bombycilla, *Schwenckfeld*, Theriot. Silesiæ, 1603, 229 (a good account).

Gnaphalvs, *Gesner*, De Avibus, ed. of 1617, 446 (orig. ed. 1555).

Garrulus bohemicus, *Gesn.* De Avibus, ed. of 1617, 636, with recognizable figure (orig. ed. 1555, p. 703).—*Aldrov.* "Orn. i. 796, pl. 798".—*Linn.* Syst. Nat. 6th ed. gen. 78, sp. 1.—*Willugh.* "Orn. 90, pl. 20".—*Albin*, Nat. Hist. Birds, ii. 1738, 25, pl. 26.

Ampelis, *Moehr.* "Gen. Av. 1752, 29".

Bombycilla bohemica, *Briss.* Orn. ii. 1760, 333, n. 63.—*Leach*, "Cat. 1816, 18".—*Steph.* Gen. Zool. x. 1817, 421, pl. 34.—*Eyton*, "Cat. ——, 8".—*Brehm*, "Vög. Deutschl. 219".

Lanius garrulus, *L.* "Fn. Svec. 179".—*Scop.* Bemerk. ed. Günth. 1770, 18, n. 20.

Turdus garrulus, *Schaeff.* Mus. Orn. 1789, 20, n. 67.

Parus bombycilla, *Pallas*, Zoog. R.-A. i. 1831, 548.

European Chatterer, European Waxwing, Black-throated Waxwing, Bohemian Waxwing, Waxen Chatterer, *English and American Authors.*

Seidenschwantz, *Frisch*, Vög. 1739, pl. 32.

Seidenschwanz, Gemeiner Seidenschwanz, Europäischer Seidenschwanz, *German.*

Grand Jaseur, Jaseur de Bohème, Jaseur d'Europe, *French.*—*Buff.* "Hist. Nat. Ois. iii. 429, pl. 26"; Pl. Enlum. 261.

HAB.—Northerly portions of the Northern Hemisphere. In America, south regularly to the northern tier of States, and in the Rocky Mountains

to Colorado; irregularly or casually to about 35° (Pennsylvania, Ohio, Indiana, Illinois, Kansas, New Mexico, and Arizona). Only *known* to breed in America on the Yukon and Anderson Rivers; believed to do so in the Rocky Mountains at latitude 49° N. (*Coues*). Scarcely known on the Pacific coast of the United States except in Alaska.

CH. SP.—♂ ♀ *Crisso castaneo, abdomine griseo-plumbeo, fronte rubescente, alis albo et flavo notatis.*

♂ ♀ : General color brownish-ash, shading insensibly from the clear ash of the tail and its upper coverts and rump into a reddish-tinged ash anteriorly, this peculiar tint heightening on the head, especially on the forehead and sides of the head, into orange-brown. A narrow frontal line, and broader bar through the eye, with the chin and throat, sooty-black, not or not sharply bordered with white. No yellowish on belly. Under tail-coverts orange-brown, or chestnut. Tail ash, deepening to blackish-ash toward the end, broadly tipped with rich yellow. Wings ashy-blackish; primaries tipped (chiefly on the outer webs) with sharp spaces of yellow, or white, or both; secondaries with white spaces at the ends of the outer webs, the shafts usually ending with enlarged, horny, red appendages. Primary coverts tipped with white. Bill blackish-plumbeous, often paler at base below; feet black. Length, 7 or 8 inches; wing, about 4½; tail, 2½.

The sexes of this beautiful bird are alike, and the principal variations, aside from mere shade of the body-color, consist in the markings of the wings. In the finest specimens before me, the ends of the primary quills are rich yellow, like the tips of the tail-feathers, forming broad firm spaces, in a continuous line when the wing is closed, with narrower offsets going around the ends of the quills. In less perfect specimens, these markings are simply white, are less firm, and do not appear on all the quills. The secondaries may or may not show the red "sealing-wax" tips, but in adult birds at least probably always show white markings at the ends, and the same is the case with the primary coverts. These wing-markings, with the chestnut crissum, and absence of yellowish on the belly, will always distinguish the species from *A. cedrorum*, independently of its much superior size. Young: There is an early streaked stage of plumage, exactly corresponding to that described under head of *A. cedrorum*.

FIG. 49.—Wing-tips of *Ampelis garrulus*.

THIS famous vagabond wandered into literature, with fine "Bohemian" instinct, at so remote a period in the history of ornithology, that it is not easy to determine which was its original *nom de plume* among the many aliases we find. The derivation of each of the names it has borne is, however, well determined. *Ampelis*, the current name of the genus, applied to this bird by Linnæus in 1735, is obviously from the Greek

ἄμπελος, the grape-vine—the root of a set of words signifying or relating to the vine and vineyard, as ἀμπελεών, ἀμπελιών, ἀμπελών, ἀμπέλινος, and many others; the form ἀμπελίς itself appears in some of the lexicons, not of the highest authority, as a diminutive of ἄμπελος, and I also find ἀμπελιών itself given as the name of some small unknown bird, "*avicula quædam incerta*," which either frequented vineyards, or was a noted berry-eater. *Ampelis*, as the name of the bird, occurs in Aristophanes, but what he meant by it is unknown; certainly, the Waxwing never frequented the vineyards of the south of Europe to any extent. The name does not occur in Aristotle, nor do I find it used in connection with the Waxwing by the writers of the 16th and 17th centuries; Linnæus may possibly have first affixed it to this bird in 1735. Before this time, however, the bird had, of course, been long and well known to the people of Northern Europe, and had received a number of vernacular or popular names, among which the equivalents of "silky-tail" and "Bohemian" are conspicuous. The latter term doubtless had its original application in the appearances of the bird in Bohemia, and stuck to it, as indicating its wandering disposition, in the tropical sense we now attach to the term. In any event, our Waxwing became the "Bohemian Jay" of writers of the 16th and 17th centuries, this book-name being generally rendered *Garrulus bohemicus*, as by Gesner* and many others who wrote their treatises in Latin, or gave birds Latin names. The various equivalents of "silky-tail" are specially interesting, as they are the source of the quasi-Latin name *Bombycilla* (βόμβυξ, *bombyx*, a worm—and species of *Bombyx* are the *silk*-worms) by simple translation of *sidenswantz*, *seydenschwanz*, *seidenschwanz*, and other forms of "silk-tail". This is used also

* Gesner (p. 446, ed. of 1617) treats very briefly "*de gnaphalo*" (*Gnaphalvs*, Γνάφαλος), which he says is the bird called Seydenschwanz in German, and which is probably so named from the character of the plumage. He refers to a subsequent page of his work (p. 636), where the same bird is described and figured under the name of Garrvlvs Bohemicus. Here we read:—"Garrvlum Bohemicum appello auem hanc, cuius picturam ab Argentoratensi pictore accepi, qui nomen eius ignorabat, sed ab aliis postea didici hac specie auem circa Norimbergam vocavi Behemle id est Bohemicam, . . . Alii alio Germanico Zinzerelle vocitant, haud scio an à vocis imitatione." From the way this paragraph opens, we are free to infer that this was the original use of the term *Garrulus bohemicus* in this connection. He describes and figures the Waxwing unmistakably, even to the sealing-wax tips ("maculæ quinæ egregie rubentes, quas natura corneas esse quidam mihi retulit").

by Schwenckfeld in 1603 in his "Theriotrophevm Silesiæ"; and it became a generic name with Brisson in 1760, and later with Vieillot. It is interesting to observe, in this connection, that a modern Greek name of the bird, γνάφαλος (or *Gnaphalvs*, as rendered by Gesner), is of similar import, meaning a lock of wool; the obvious implication of all these terms being the remarkably smooth, soft, as if fleecy, plumage of the bird, as characteristic as the berry-eating habits, which the set of words from ἄμπελος signalize. The impertinence of the English term "chatterer" as applied to birds of this genus has been frequently criticised by writers, the species being notably silent, or only sibilant. I do not know when or by whom the name may have been first used in this connection, or what equivalents may be found in other languages. The term may be simply rooted in *Garrulus*, which, as we have seen, was long in use for the bird, not considered as specially loquacious, but simply as a species of *Jay;* yet we may readily suppose that the enormous multitudes which sometimes appear make a great deal of noise, about the quality of which people were not very particular when they came to call the birds "chatterers". The Linnæan use of *garrulus* as a trivial designation may have been purely arbitrary, or by simple version of an old generic into a new specific term; his practice of naming justifies either supposition. There is, however, as we learn from Gesner (see note on a preceding page), among the old vernacular names of the bird one derived from its voice; this is *Zinzerelle*, a word well formed to express the soft sibilant notes of the bird. The meaning of our English name "Waxwing" is obvious; the period and circumstances of its introduction I know not.

In olden times, when popular ignorance dreaded everything extraordinary, the occasional apparitions of the Bohemian Waxwing caused general consternation, and supernatural powers of portent were attributed to the bird that came whence no one knew, and departed as mysteriously. I could fill many pages with the history of such occurrences, often couched in the most exaggerated language; but a few examples must suffice. Thus, Gesner narrates that in the year of our Lord 1552, these birds appeared between Mayence and Bingen on the Rhine in such numbers that they darkened the light of day as they flew—"inter Mogentiam & Bingam iuxta Rhenum maximis examinibus apparuerunt in tanta copia,

vt subito qua transuolabant, ex vmbra earum veluti nox appareret." Many, he says, were caught and eaten; and pictures of the unknown birds which caused such a prodigy were published. "Rari sunt plerisque in locis, & cum apparent pestilens aeris mutatio expectatur"; and such phenomena were long held to presage war, pestilence, and other public calamities, or to foretell some national event soon to transpire.

In February, 1530, according to Aldrovandi, a visitation occurred, marking the coronation of Charles V. at Bologna; in 1551, large flocks appeared, spreading in numbers through the Modenese, the Plaisantine, and other parts of Italy, but apparently avoiding the Ferrarese, as if to escape the earthquake which was soon afterward felt; and in 1571 flocks of hundreds were seen flying about in the same country. Bonaparte, in whose account of 1828 I find these items from Aldrovandi, states that they have of late years been extremely rare in Italy, Germany, and especially France, being seen only singly or in stray companies of small extent. In the winter of 1810, large flocks were dispersed through England, from which period, says Bonaparte, we do not find the bird recorded by English writers until February, 1822, when, as well as during the following winter, a few were observed. In Necker's memoir on the birds of Germany, as quoted by the same writer, it is stated that from the beginning of the present century only two considerable flights had been observed in that canton, one in January, 1807, the other in January, 1814, in which year the birds were numerous, and did not depart until March. In 1807, they were dispersed over much of Western Europe; and they were seen near Edinburgh early in that year. Of very late years, their appearances in Great Britain have been frequently noticed, as may be gathered from the number of references I present in the foregoing bibliography; the year 1850 is specially prominent in these chronicles. They also visited England, Germany, &c., in unusual abundance in the winter of 1866–67, as testified by the various records I have presented. Schoepff states (Zool. Gart. 1867, p. 160) that their then appearance in Switzerland was for the first time since 1811.

The history of the Waxwing in America, to which we will now confine our attention, has never been written in full. It was unknown as an American bird to Vieillot and Wilson; and any early writer who may have attributed it to this country meant the Cedar-bird, *A. cedrorum*, which was long regarded by some

as only a variety of the Bohemian Waxwing, though Catesby, Brisson, and others knew better. The Bohemian appears to have been first discovered in America "in the spring of 1826, near the sources of the Athabasca, or Elk River, by Mr. Drummond", as we are informed by Sir John Richardson, who says that he saw it himself the same season at Great Bear Lake, in latitude 65°. The Athabasca specimens were transmitted to England, and communicated by Mr. Leadbeater to the Prince of Musignano, who in 1828 described and figured the species upon this material in his "American Ornithology". Richardson's account, in the "Fauna Boreali-Americana", did not appear until 1829, and doubtless the first well-founded publication of the species as an American bird was in the Appendix of Bonaparte's "Synopsis", in the second volume of the Annals of the Lyceum of Natural History of New York, page 438, where the species is numbered 65 *bis*. In this place, Bonaparte simply notes, "Inhabits near the Rocky Mountains"; but in his "American Ornithology" he gives the long and interesting account of the bird from which I have already extracted some items bearing on its general history. Referring to the Athabasca specimen described, he states that it was a female, taken on the 20th of March, 1825, while Richardson gives the date as 1826. The last-named states that the bird appears in flocks at Great Bear Lake about the 24th of May, when the spring thaw exposes the berries on which it feeds; that it remains but a few days; that its breeding-place was unknown to him, but believed to be in the rugged and secluded mountain-limestone districts in the 67th and 68th parallels, where the common juniper, on the fruit of which it feeds, abounds. He adds a note of his observation of a large flock on the Saskatchewan early in May, 1827, when several hundred individuals alighted with loud twittering on one or two trees of a poplar grove, and stayed about an hour.

Such is the substance of our original advices, which, however, did not long remain unique. Townsend did not observe the bird on the Columbia, and Nuttall's account was merely a note derived from Richardson; but Audubon, in 1838, gave some additional particulars. This author states that the southernmost locality where he has known the bird to be procured is the vicinity of Philadelphia, where, as well as on Long Island, several were shot in 1831 and 1832, and that a pair were seen and pursued, but without success, by his sons near Boston in

the latter year. His figures were drawn from Nova Scotian specimens presented to him by Thomas McCulloch, of Pictou, who procured several others in 1834, and contributed the very graphic and touching biographical sketch with which Audubon's account of the species concludes. The species appears in Peabody and Giraud, and in the course of the next decade or two we find it fairly represented in current literature through reports of its presence in various northerly States: Ohio, Storer, 1845; Wisconsin, Hoy, 1853; Ohio, Read, the same year; Illinois, Kennicott, 1854; Massachusetts, Kneeland, 1857; and there are doubtless other accounts of this period which I have not at hand. Dr. Brewer's late notice mentions a flock of twenty or thirty which appeared in Boston in mid-winter, "somewhere about 1844".

Up to the year 1858, we had no evidence of the gathering of American Bohemians in the enormous multitudes which early made them famous in Europe. At that date, however, Professor Baird made known an instance of such prodigious flocking of the species, giving us at the same time one of our western-most records. "Mr. Drexler," he says, "saw 'millions' of this species while in the winter camp of the South Pass wagon road party, at the head of Powder River, Nebraska. Every tree for miles was filled with them, the flock rivalling that of the wild pigeon in its size" (BNA. p. 923). This record remains singular to this date, as the numerous isolated notices of the bird we have since acquired all relate to ordinary occurrences in particular localities; though it should be added that Mr. McIlwraith reports the irregular occurrence of "vast" flocks in Canada West.

In 1861, Dr. J. G. Cooper presented the account of his capture of a single individual at Fort Mojave, Arizona, the first-known instance of the occurence of the bird in the United States west of the Rocky Mountains, and the southernmost on record. "It appeared on January 10th, after a stormy period which had whitened the tops of the mountains with snow, and was alone, feeding on the berries of the mistletoe, when I shot it." Doubtless, as Dr. Cooper surmises, this individual was a straggler from some of the neighboring mountains. I understand that the validity of the record has been suspected; but, in one of his late papers, Dr. Cooper states that the specimen is preserved in the California Academy of Science to vouch for the correctness of his identification. All the citations of "Ari-

zona" for the species rest on this capture, and no other person seems to have found the bird so far south and west.

Though the Bohemians have scarcely been found in the Pacific Province of the United States, the Rocky Mountain region, as might be supposed, seems to be the main line of migration along which the birds push farthest, as well as most regularly, into the United States in winter. In 1860, Dr. Hayden took such a large series on Deer Creek that we may infer he found the birds abundant. In Colorado, according to Mr. T. M. Trippe, the Bohemians are "abundant" in certain mountainous localities, as at Idaho Springs, from November or December until March. Baird and Ridgway state, in their portion of the History of "North American Birds", that the bird extends along the Rocky Mountains and the plains as far as Fort Massachusetts (New Mexico) and Fort Riley, Kansas. In the East, records have multiplied of late years, but it is unnecessary to analyze the evidence, as it shows nothing but what we have already seen. For the Pacific region, I possess but a single record, that lately furnished by Captain Charles Bendire, from observations made at Camp Harney, Oregon, and published in "Forest and Stream" of February 17, 1876.

From all the facts we have acquired, we make out an extreme southern range of the species in America to about 35° north; its regular or at least normal occurence in winter in the region of the Great Lakes to Northern Ohio, and in the Rocky Mountain region to the State of Colorado; its irregular but frequent appearance in Northern New England; its casual presence in severe winters in Southern New England, the Middle States to Philadelphia, Southern Ohio, Indiana, Illinois, and Kansas; and its apparent scarcity in the Pacific Province.

All this matter, it will be remembered, bears only on the southward migration of the species in the fall from its boreal summer home; we have seen how it wanders about, sometimes whirling in monstrous flocks over the country, and will turn to consider a no less interesting aspect of its life. In days gone by I used to ponder over the surmises I read respecting the breeding-place of the Bohemian, gaining unconsciously a vague idea that somewhere, perhaps in the very focus of the aurora borealis, this mysterious bird swarmed to nest in a sort of rookery; but I have no doubt that when dispersed to breed in the far North, it is no more conspicuous than the Cedar-bird is with us under the same conditions. British America, to say

nothing of Alaska, is pretty broad and deep, requiring a great many Bohemians to make any decided impress on its scenery. We are all aware now how long it was before the breeding of the Waxwing in Europe was established beyond dispute, as announced by Mr. John Wolley, in 1857, before the Zoological Society of London, and have read Professor Newton's "Particulars of Mr. J. Wolley's Discovery of the Breeding of the Waxwing" in the "Ibis" of 1861. Shortly afterward, Messrs. Kennicott and MacFarlane each discovered the breeding of the bird in America—the former on the Yukon in 1861, the latter on Anderson River during the same or the following year. Publication of this discovery, however, seems to have been delayed until 1866, when it was announced by Professor Baird in the following brief terms:—

"The only instance on record of their [*i. e.* the nest and eggs] discovery in America are of a nest and one egg by Mr. Kennicott, on the Yukon, in 1861, and a nest and single egg on the Anderson River, by Mr. MacFarlane, both of which, with the female parents, are in the possession of the [Smithsonian] Institution."—(Rev. AB. 1866, 406.)

This is the same material as that upon which Dr. Brewer based his account of 1874; but the latter article disagrees with Professor Baird's original and doubtless accurate note, and is inconsistent in itself in several particulars, which I have italicized in the following extract. Says Dr. Brewer:—

"Specimens of the bird were obtained on Anderson River, in 1862, by Mr. MacFarlane, *but he was not able to find the nest.* At Fort Yukon, July 4, [1861,] Mr Kennicott met with the nest of this species. The nest, which contained but *one* egg, was about eighteen feet from the ground, and was built on a side branch of a small spruce that was growing at the outer edge of a clump of thick spruces, on low ground. The nest was *large*, the base being made of small, dry *spruce twigs.* Internally it was constructed of fine grass and *moose hair*, and lined *thickly* with large feathers. The female was shot as she rose from her nest, by Mr. Kennicott's hunter, who had concealed himself near the spot for that purpose. Mr. Kennicott had seen the nest and both parents near it before it was taken, and had thoroughly satisfied himself as to its complete identification" (Hist. NAB. p. 398). On the page following, the author quotes, without criticism, a statement that "its eggs have been obtained at Fort Yukon". On page 400, Dr. Brewer redescribes the

same nest in somewhat discrepant terms:—"The nest from the Yukon, obtained by Mr. Kennicott, (S. Coll. 6, 326), is *smaller*, and bears but little resemblance to the European. It is but five inches in diameter, of irregular shape. In height and cavity it nearly corresponds. In place of the lichens of the European, this nest is made of fine grass-stems, *strips of bark*, and a *few* feathers." Though the points here criticised be really immaterial, in as far at least as the descriptions of the nest are concerned, it would have been more satisfactory to have had one good coherent account in this case, to which unusual interest attaches. One of Mr. Wolley's nests, "obtained in Finland, June 19, 1861 (S. I. 5, 327)," and generously presented to the Smithsonian Institution by Professor Newton, is described by Dr. Brewer with evident care and particularity. It contains five eggs, which is said to be the usual number, though six were found in one instance. As described by Dr. Brewer, the Smithsonian eggs measure each an inch in length by 0.67 to 0.70 in breadth; the ground-color varies from light slate to yellowish stone-color, and is blotched and dotted with markings of various shades and sizes, chiefly dark purple or blackish, with others of a yellowish-brown, nearly all the spots being shaded with the peculiar penumbra so conspicuous in the eggs of the Common Cedar-bird. "The egg obtained by Kennicott on the Yukon is smaller than the European specimen, measuring .90 by .65 of an inch. Its ground is more of a greenish-slate or stone-color, and the spots are of a dark-brown, with a deep violet-shading" (Brewer, *l. c.*).

To these original accounts of the breeding of the Bohemian in America, I have to add, from my own observations, that the bird undoubtedly nests in the United States. While in the Rocky Mountains, at latitude 49°, I secured a newly fledged bird so young that there is no reasonable doubt that it was bred in the vicinity. This specimen was shot in thick coniferous woods, at an altitude of about 4,200 feet, on the 19th of August, 1874. No migration had begun at the time, and no other individuals were observed, as would most likely have been the case had they been roving away from their summer home.

In general terms, it may be asserted that the nest and eggs of the Bohemian only differ materially from those of the Carolina Waxwing in size, and that the two birds have substantially the same breeding habits. The special natural history of the

Bohemian involves nothing more than its geographical distribution, including its boreal summer home, its erratic movements, and its occasional multitudinous gatherings, for it shares all those traits of the Cherry-bird which I will make the subject of the following sketch.

The Carolina Waxwing

Ampelis cedrorum

Lanius garrulus, *β, Linn.* SN. i. 1758, 95, n. 10 *β* (Cates. i. 46).

Ampelis garrulus, *β, L.* SN. i. 1766, 297, n. 2 *β*.—*Gm.* SN. i. 1788, 838, n. 1 *β*.—*Lath.* IO. i. 1790, 363, n. 1 *β*.

Ampelis garrulus, 2, *Turt.* SN. i. 1806, 511.

Ampelis garrulus, *Bartr.* Tr. Fla. 1791, 290, *bis* (full account p. 298).

Bombycilla cedrorum, *Vieill.* OAS. i. 1807, 88, pl. 57.—*V.* EM. ii. 1823, 766.—*Less.* Tr. Orn. 1831, 367.—*Vieill.* Gal. Ois. i. 1834, 186, pl. 118.—*Cab.* Mus. Hein. i. 1850, 55.—*Gundl.* J. f. O. 1856, 3 (Cuba).—*Maxim.* J. f. O. 1858, 189.—*Gundl.* J. f. O. 1859, 350 (Cuba).—*Gundl.* J. f. O. 1861, 410 (Cuba).

Ampelis cedrorum, *Gray,* G. of B. i. 1849, 278.—*Scl.* PZS. 1856, 299 (Cordova).—*Knecl.* Pr. Bost. Soc. vi. 1857, 234.—*Bd.* BNA. 1858, 318.—*Scl.* PZS. 1858, 302 (Parada).—*Scl.* PZS. 1859, 364 (Xalapa).—*S. & S.* Ibis, 1859, 13 (Guatemala).—*Henry,* Pr. Phila. Acad. 1859, 106 (New Mexico).—*Heerm.* PRRR. x. 1859, 56.—*Coop. & Suckl.* NHWT. 1860, 187.—*Tayl.* Ibis, 1860, 111 (Honduras).—*Gundl.* J. f. O. 1861, 328 (Cuba).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 364.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 409.—*Albrecht,* J. f. O. 1862, 202 (Jamaica).—*Verr.* Pr. Ess. Inst. iii. 1862, 148.—*Boardm.* Pr. Bost. Soc. ix. 1862, 126.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 162.—*Blak.* Ibis, 1863, 65 (British America).—*March,* Pr. Phila. Acad. 1863, 294 (Jamaica).—*Lord,* Pr. Roy. Art. Inst. iv. 1864, 116 (British Columbia).—*Scl.* PZS. 1864, 173 (City of Mexico).—*Allen,* Pr. Ess. Inst. iv. 1864, 66.—*Dress.* Ibis, 1865, 479 (Texas).—*Clifford,* Tr. Illinois Agric. Soc. v. 1865, 925 (habits).—*Bd.* Rev. AB. 1866, 407.—*McIlwr.* Pr. Ess. Inst. v. 1866, 87.—*Lawr.* Ann. N. Y. Lyc. viii. 1866, 285.—*Brown,* Ibis, 1868, 421 (Vancouver).—*Butch.* Pr. Phila. Acad. 1868, 149 (Laredo, Tex.).—*Coues,* Pr. Ess. Inst. v. 1868, 276.—*Coues,* Pr. Bost. Soc. xii. 1868, 112 (South Carolina).—*Sumich.* Mem. Bost. Soc. i. 1869, 547 (Vera Cruz, winter).—*Coop.* Am. Nat. iii. 1869, 34, 473.—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19.—*Coop.* B. Cal. i. 1870, 129.—*Gillman,* Am. Nat. iv. 1870, 692.—*Coues,* Key, 1872, 115, f. 56.—*Allen,* Bull. MCZ. iii. 1872, 176.—*Scott,* Pr. Bost. Soc. xv. 1872, 224.—*Aiken,* Pr. Bost. Soc. xv. 1872, 198 (Colorado).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 370.—*Gundl.* J. f. O. 1872, 438 (Cuba).—*Ridgw.* Bull. Ess. Inst. v. 1873, 181 (Colorado).—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 714.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 371.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235.—*Kirtl.* Pr. Cleveland Acad. 1874, 277.—*Coues,* BNW. 1874, 93, 233.—*Pack.* Am. Nat. viii. 1874, 271.—*Allen,* Pr. Bost. Soc. xvii. 1874, 54 (Yellowstone River).—*Hensh.* Rep. Orn. Spec. 1874, 43 (Utah); 106 (Arizona).—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 229.—*B. B. & R.* NAB. i. 1874, 401, pl. 18, f. 2.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 18 (Tehuantepec).—*Gentry,* Life-Hist. 1876, 205.—*Minot,* BNE. 1877, 137.—*Merr.* Tr. Conn. Acad. iv. 1877, 32.

Amphelis cedrorum, *Gregg,* Pr. Elmira Acad. 1870.

Corvus cedrorum, *Cabot,* Naum. ii. Heft iii. 1852, 65 (generic name slipped with "*Ampelis*" *cacalotl*).

Ampelis americana, *Wils.* AO. i. 1808, 107, pl. 7, f. 1.—*Bp.* Journ. Phila. Acad. iv. 1824, 37.

Bombycilla americana, *Licht.* "Preis.-Verz. Mex. Vög. 1830, 1"; J. f. O. 1863, 56.—*Sw. & Rich.* FBA. ii. 1831, 239.—*Kaup,* Thierr. ii. pt. i. 1836, 173.—*Hartl.* Naum. ii. 1852, 52 (Cuba and Guayaquil).—*Hoy,* Pr. Phila. Acad. 1853, 382.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 584.—*Jones,* "Nat. in Berm. 1859, 29".—*Hoy,* Smiths. Rep. for 1864, 1865, 438.

Bombycilla carolinensis, *Briss.* Orn. ii. 1760, 337.—*Steph.* Gen. Zool. x. 1817, 422.—*Bp.* Journ. Phila. Acad. iv. 1824, 37.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 59.—*Wagl.* Isis, 1831, 528.—*Aud.* OB. i. 1831, 227, pl. 43.—*Nutt,* Man. i. 1832, 248.—*Bp.* CGL. 1838, 9.—*Peab.*

Rep. Orn. Mass. 1839, 289.—*Towns.* Journ. Phila. Acad. viii. 1839, 152.—*Aud.* Syn. 1839, 165.—*Aud.* BA. iv. 1842, 169, pl. 246.—*Giraud*, BLI 1844, 163.—*Thomps.* Vermont, 1853, 74, fig.—*Newt.* Zoologist, ix. 1851, 3277 (Cambridgeshire, England).—*Read*, Pr. Phila. Acad. 1853, 397.—*Brew.* Pr. Bost. Soc. iv. 1854, 325.—*Gloger*, J. f. O. 1854, 175 (nest, &c.).—*Henry*, Pr. Phila. Acad. 1855, 313.—*Pratten*, Tr. Illinois Agric. Soc. i. 1855, 603.—*Putn.* Pr. Ess. Inst. i. 1856, 213.—*Haym.* Pr. Phila. Acad. 1856, 292.—*Bry.* Pr. Bost. Soc. vi. 1857, 118 (Nova Scotia).—*Willis*, Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Bland*, Smiths. Rep. for 1858, 1859, 287 (Bermudas).—*Martins*, J. f. O. 1859, 213 (same).—*Gieb.* Vög. 1860, 80, fig.—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Williams*, Am. Nat. iii. 1869, 384.—*Trippe*, Pr. Ess. Inst. vi. 1871, 117.

Bombycilla carolinaensis, *Wailes*, Rep. Miss. 1854, 318.

Ampelis carolinensis, *Gosse*, B. Jam. 1847, 196.—*Bp.* CA. i. 1850, 336.—*Newt.* Zoologist, x. 1852, 3506 (Cambridgeshire, England).

Coquantototl, *Fern.* "Hisp. 55".

Oiseau Xomotl, d'Amérique, huppé, *Seba*, "ii. 66, pl. 65, f. 5".

Chatterer, *Cates.* "Car. i. 1754, 46, pl. 46".

Chatterer of Carolina, *Edw.* "Glean. 1758, 66, pl. 242".

Jaseur de la Caroline, *Buff.* "Hist. Nat. Ois. iii. 441".—*Briss.* Orn. ii. 1760, 337, n. 64.

Prib Chatterer, *Penn.* A Z. ii. 1785, 346, n. 207.

Jaseur du cèdre, *Vieill.* ll. cc.—*Le Moine.* Ois. Canad. 1861, 219.

Amerikanischer Seidenschwanz, *Kaup*, l. c.

Cedar-bird, Cedar Waxwing, Carolina Waxwing, Cherry-bird, *Authors.*

HAB.—North America at large, to lat. 54° N. or beyond; south through Mexico and Central America; Bermudas, Jamaica, and Cuba. Breeds indifferently in its North American range, migrates or rather wanders irregularly according to supply of food, and winters in much of the United States as well as beyond. Accidental in England.

CH. SP.—♂ ♀ *Crisso albo; abdomine flavicante; remigibus fusco-cinereis, innotatis.*

♂ ♀, adult: General color of the body shading from clear pure ash on the upper tail-coverts and rump through olivaceous-cinnamon into a richer and somewhat purplish cinnamon on the fore parts and head. On the under parts, the color shades through yellowish on the belly into white on the under tail-coverts. There is no demarcation of color whatever on the body, and the tints are scarcely susceptible of adequate description. Frontlet, lores, and stripe through the eye velvety-black; chin the same, soon shading into the color of the breast. A sharp white line on the side of the under jaw, and a narrower one bordering the black frontlet and lores; lower eyelid white. Quills of the wings slate-gray, blackening at the ends, paler along the edges of the inner webs; without white or yellow markings; inner quills tipped with red horny appendages. Tail-feathers like the primaries, but tipped with yellow, and sometimes also showing red horny appendages. Bill plumbeous-black, sometimes paler at base below; feet black. Length, 6 or 7 inches; extent, 11½–12; wing, 3½–3¾; tail, 2¼.

There is comparatively very little difference in the body-coloration. In very high condition, there is sometimes just a trace of whitish tipping on some of the primary quills.

Young: Brownish-gray, with a slight olive shade; paler below, and whitening or becoming slightly yellowish on the belly; everywhere streaked with dingy whitish; the markings most evident on the breast and sides. Wings and tail as in the adults, but usually lacking the red appendages. The vel-

vety-black and white on the head imperfectly defined. Bill pale at base below; feet plumbeous. A specimen described by Brewster as a female in the "first plumage" had two small wax tips; the tail narrowly tipped with yellow; a dull black loral line from nostril to eye, including anterior half of both eyelids; entire under parts "brownish-buff", palest about anal region, deepest on throat and chin; breast and sides thickly streaked with cinnamon-brown; upper parts duller than in the adult, with obscure "dusky-buff"; "rump grayish-brown with a tinge of olive".

Specimens apparently mature and full-feathered frequently lack the sealing-wax tips. These are normally confined to the secondaries, but occasionally appear on one or several primaries, and more or fewer or all of the rectrices; a case is recorded in which an under tail-covert was similarly embellished. Both sexes possess these ornaments, but as a rule they are best developed in the male. The normal period of their appearance is not known—it is probably not constant; birds in the earliest known plumage may possess one or more. They are possibly deciduous, independently of moult of the feather. Their use is unknown, but surmised by some to prevent fraying of the feathers, though other feathers not thus protected do not fray more than usual.

The sexes are not obviously different. There is comparatively little variation in the body-coloration, chiefly in the shade of yellow on the belly. The yellow tail-band may be reduced to a mere trace. Sometimes more or fewer primaries are tipped with white, and these may acquire a touch of yellow, indicating approach to the normal condition of *A. garrulus*. In a case mentioned by Mr. William Brewster, all the primaries excepting the first three were broadly tipped with white, and in the centre of each white spot appeared a smaller yellow one.

AT any time of the year, in almost any part of the country, one may hear some curious wheezing, lisping notes, and, on looking about him, may see a dozen or a hundred little birds in sight, flying in an easy, rather undulating course, to alight in a compact body on the nearest tree, where they remain silent and motionless for a few moments, drawn up to their full heights, displaying their long top-knots; then they begin to move about and feed, unless some alarm sends them off to another tree. When the cedar ripens its glaucous-blue berries, these same birds are sure to be found there, gorging themselves on this fruit till they are literally choke-full—the last few berries sticking

FIG. 50.—The Cherry-bird, natural size.

in their capacious throats for want of room below. These gourmands grow extremely fat at times; they are commonly called Cedar-birds, and their flesh is accounted a delicacy. They are also named Cherry-birds, from their fondness for cherries; and might with equal propriety be known as Gum-birds, or Huckleberry-birds, or by any other set of names indicating that they feed on a great variety of edible small-fruits. Naturally, the horticulturists dislike to see these silky-feathered fruiterers come trooping as "thick as thieves", and kill so many that in some sections their numbers become noticeably reduced. But we should always remember that at certain seasons these indolent, easy-going gormandizers display more agility and address in bug-catching than might be expected from them, destroying vast numbers of noxious insects. Let the irate gardener remember this when he goes for his gun; and let us all hope that people will learn, in the course of time, that the indiscriminate slaughter of birds, even of such noted thieves as Crows and Blackbirds, necessarily turns a well-poised balance in favor of insect-pests and by so much against the true interests of agriculture.

Like most well-fed persons, our satiny Waxwings offset their gluttony and indolence with some nice, amiable traits. They are tender-hearted, affectionate birds, fond of each other, and quite capable of showing a degree of heroism in their devotion to one of their number who may be in difficulty. They make pleasant cage-birds, sleek and jaunty in their general bearing, with a certain *nonchalance*, which, however, it would be indiscreet in a fly to presume on so far as to enter their cage. They are either very innocent or unsuspicious birds, for they suffer themselves to be killed or captured when a little wit would have saved them. Their habitual indifference extends even to their courtships and housekeeping; they make cool love, seem in no hurry about it, and not much concerned for its consequences. You may see them lounging about in flocks all through the summer; they scarcely nest until the season is half over, and sometimes postpone their domestic affairs until the fall. The migration is another irregular and desultory matter with them; they are not reliable passengers, for, as if rivalling their larger cousins, these lesser Bohemians roam at their convenience over the country, whenever food is plenty and accessible. They retire from more northerly and uninviting regions in the fall, but in most parts of the country

some of them may be found at any time of the year, while others are off in Mexico, Central America, or the West Indies. In the Colorado region, as in the West at large, there are comparatively fewer Cedar-birds than in the eastern parts of the United States, doubtless because fruit is, on the whole, less abundant, and not on account of any geographical considerations.

So they lead their idle, uneventful lives—these *débonnaire* birds, sociable but not domestic, even a trifle dissipated, good-natured enough to a friend in a scrape, very reliable diners-out, and fond of showing off their dressy top-knots, on which so much of their mind is fixed.

Genus PHÆNOPEPLA Sclater

Phainopepla, *Scl.* PZS. 1858, 543. (Special paper: Note on the Genus *Cichlopsis* of Cabanis. < PZS. xxvi. 1858, pp. 541–543.)
Phænopepla, *Coues,* Ibis, 1865, 163.—*Bd.* Rev. AB. 1866, 415.
Ptilogonys p., **Cichlopsis** p., **Lepturus** p. of *Some.*

CHARS.—Bill somewhat as in *Ampelis,* but slenderer for its length; nostrils naked, scaled; antiæ bristly, reaching to nostrils; a few short rictal bristles. Tarsus scutellate anteriorly, and slightly subdivided on sides below. Hind toe very short; middle toe and claw about as long as tarsus; lateral toes a little unequal, outer the longer, reaching a little beyond base of middle claw, its basal joint adherent to middle; inner lateral toe nearly free to the base; claws all much curved. Wings not longer than tail, rounded, of ten primaries, the 1st spurious, though more than half as long as the 2d, which about equals the length of the secondaries; point of wing formed by the 4th, 5th, and 6th quills. Tail long and fan-shaped, not emarginate, of broad plane feathers widening to their obtuse ends. Head with a long, thin, occipital crest. Sexes dissimilar: ♂ glossy black, with large white wing-patch; ♀ dull-colored, young not spotted or streaked.

A notable genus, established upon the *Ptilogonys nitens* of Swainson, our only representative of a group which includes true *Ptilogonys,* though having nothing to do with the species of *Myiadestes,* which have often been called "Ptilogonys".

Crested Shining-black White-winged Flysnapper

Phænopepla nitens

Ptilogonys nitens, *Sw.* "Anim. in Menag. in Lardner's Cab. Cyclop. Birds, pt. iii. 1838, 285" (orig. descr.; some say 1837).—*Bp.* CA. i. 1850, 335 (synon. and diagn.).—*Heerm.* Journ. Phila. Acad. ii. 1853, 262 (California; note of habits).—*Cass.* Illust. 1854, 169, pl. 29 (general history).—*Henry*, Pr. Phila. Acad. 1855, 308 (New Mexico).—*Heerm.* PRRR. x. 1859, 38 (California).

Cichlopsis nitens, *Bd.* BNA. 1858, 320 (synonymy and description).

Phainopepla nitens, *Scl.* PZS. 1858, 543 (type of genus).—*Bd.* BNA. 1858, 923 (description).—*Bd.* U. S. Mex. B. Surv. ii. pt. ii. 1859, Birds, 11 (Arizona, etc.).—*Kenn.* PRRR. x. 1859, 25 (New Mexico or Arizona).—*Bd.* Pr. Phila. Acad. 1859, 303 (Cape St. Lucas).—*Xant.* Pr. Phila. Acad. 1859, 191 (California).—*Henry*, Pr. Phila. Acad. 1859, 106 (New Mexico).—*Bd.* Ives's Rep. Colo. R. 1861, pt. v. 5.—*Scl.* Cat. AB. 1862, 47 (synonymy).—*Scl.* PZS. 1864, 173 (City of Mexico).—*Dress.* Ibis, 1865, 480 (Eagle Pass, Texas).—*Coop.* Am. Nat. iii. 1869, 34, 185 (Cajon Pass, Cal.).—*Coop.* B. Cal. i. 1870, 131 (general account).—*Yarrow*, Rep. Orn. Specs. 1874, 34 (Nevada, *Bischoff*).

Phænopepla nitens, *Coues*, Ibis, 1865, 163 (Arizona).—*Coues*, Pr. Phila. Acad. 1866, 71 (Arizona).—*Coues*, Pr. Phila. Acad. 1868, 83 (Arizona).—*Bd.* Rev. AB. 1866, 416, fig. (critical).—*Coues*, Key, 1872, 116 (description).—*Coues*, BNW. 1874, 95 (note on the song).—*Coues*, Am. Nat. viii. 1874, 542 (correction of Brewer's error—see *infrà*).—*Coop.* Am. Nat. viii. 1874, 17 (Cuyamaca Mountains).—*B. B. & R.* NAB. i. 1874, 405, figs. pl. 18, f. 3, 4 (general history); iii. 1874, 507 (nest and eggs).—*Hensh.* Rep. Orn. Specs. 1874, 106 (Arizona) —*Hensh.* List B. Ariz. 1875, 157 (same).—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 229 (habits).—*Ridgw.* Rep. Surv. 40th Par. 1877, 447 (Nevada; habits).

Hypothymis nitens, "*Lafr.*"

Lepturus galeatus, *Less.* "Compl. Buffon, 1838, —; Rev. Zool. 1849, 4".

"Myiadestes townsendi", *Brew.* Pr. Bost. Soc. xvi. 1873 (pub. 1874), 109 (error; nest and eggs of *Phænopepla nitens* described as those of *M. townsendi*).

Black Fly-catcher, Black Ptilogonys, Shining-crested Flycatcher, Shining Ptilogonys, *Aliq.* locis passim suprà citatis.

HAB.—Mexico; Lower California; southern portions of the Middle and Western Provinces of the United States (Texas, New Mexico and Arizona, Southern California, Southern Nevada, and probably portions of Utah and Colorado).

CH. SP.—*Cristata.* ♂ *Chalybeo-atra, remigibus spatio magno albo.* ♀ *griseo fusca, infrà dilutior speculo alari obsoleto, alis caudâque nigricantibus, albido limbatis.*

♂, adult: Entirely rich lustrous black, with steel-blue or greenish reflections. Primaries with a large white space on the inner webs. Bill and feet black. Length about 7½ inches; "extent, 11½"; wing, 3½–3¾; tail, 3½–4⅓; bill, ⅝–½; tarsus, ⅝–¾; middle toe and claw, ⅜–⅝.

♀, adult: Crested, like the male. Entirely brownish-gray, paler beneath, the wings and tail blackish, the white on the inner webs of the primaries much reduced or extinguished, and in its stead much whitish edging of the quills and coverts, tail-feathers, and crissum.

Young, ♂: Like the ♀; and during the progress to maturity every gradation between the characters of the two sexes is observed. Sometimes nearly all the feathers are skirted with white.

WHILE roaming about in Arizona, sometimes hunting for birds and sometimes for Indians, I used at intervals to see a bird that I did not then know, and that I came to regard at last as great "medicine", so persistently did it elude me—now I could not get a shot at the shy thing—now a fair shot offered, but we had orders not to shoot for fear of discovery. It was a beautiful jet-black creature, showing a pair of white disks, one on each side, when it flew; generally seen amidst dense chaparral, dashing about with a nervous yet lightsome flight, reminding one of the action of a Mockingbird; now for a moment balancing with expanding wings and tail on some prominent spray, then darting into the air to secure a passing insect, or hurrying out of sight in the safe recesses of the covert. A rather harsh and querulous note, which I learned to associate with this wild and restless bird, was sometimes heard; and once I listened to a superb piece of music which I am perfectly sure came from this mysterious stranger. It was growing dusk: the scene, the camp of a scouting-party returning from unsuccessful pursuit of some Indians, who had raided and run off our beef, and men busy gathering for burial the charred and dismembered body of a comrade, who had been killed and burned a few days before on that very spot, where the wolves had afterward fought for the remains. The bird of omen, for good or bad, appeared in sombre cerements, and sang such a requiem as touched every heart; the camp grew more quiet than usual, and we went to bed early.

This was the last time I ever saw or heard this remarkable bird, which was a rather uncommon summer resident in the immediate vicinity of Fort Whipple, though abundant a little lower down and farther south. I noticed its preference for rather open country, and observed some of its traits, as just said, but learned little to the point respecting its habits. It was originally described from Mexico by the noted quinarian, William Swainson, whose whimsical theories of classification should not blind us to the value of his actual contributions to ornithology—whose visions, indeed, have represented many curious analogies that birds afford; and appears to have been first added to the fauna of the United States by Col. George A. McCall, while travelling from Vallecita to El Chino in California. In the course of a mountain brook, whose clear waters were shaded at intervals with gnarled and scrubby oaks, this distinguished officer observed a dozen of the dark-hued birds pitch-

ing about the topmost branches in active pursuit of their insect prey—light and graceful on the wing, though less swift and decided in their motions than true Flycatchers, rising high in the air, then gliding swiftly back to their perches, while the bright white wing-spot gleamed in the sunshine in contrast with the black body-color. On his closer approach, these slender-bodied birds became alarmed, ceased their aërial evolutions, and winged their way to the hillside, to resume their sport among the scrawny bushes that struggled for foot-hold with the deeply-rooted rocks. But he followed the wayward fugitives, now thoroughly on the *qui vive*, and at length, after dismounting and clambering over the rocks, secured his trophies.

This was in 1852. The year previous, however, Dr. A. L. Heermann* had secured both adult and young bird on the Cosumnes River in California, and he subsequently found the species again in the Colorado Desert, near the Little Lagoon, where an individual "was perched on a Mesquite tree, jerking its tail almost incessantly, as do various other species of Flycatchers, and dashing occasionally in irregular curves and angles high into the air in pursuit of insects". On nearing the Colorado River, the same gentleman saw gatherings of twenty or thirty of these birds, many of which would be on the wing at once, making a pretty spectacle.

I derive these items, much abridged, from Mr. Cassin's beautiful book, which made the bird well known to American ornithologists by the faithful colored portraits of both sexes it contains, and these excellent fragments of biography. The curious creature, for which we have no very apt English name, is evidently a well-marked character, so similarly are different observers impressed at first sight. See what a later writer, Mr. Ridgway, says, and how he reproduces a picture that we now recognize at a glance:—

"On several occasions we heard, among the cedar and piñon woods of the desert ranges in Western Nevada, a note so similar to the prolonged, querulous, rattling call of Nuttall's Woodpecker (*Picus nuttalli*), that we entered the fact among our notes as evidence of the occurrence of that species eastward of the Sierra. We could never see the author of these notes, however, until, on the 27th of June, 1868, when exploring the Soda Lakes of the Carson Desert, we heard near by, in a ravine of

*The substance of Dr. Heermann's account is inserted by Dr. Brewer in his "History", but wrongly accredited to Dr. T. C. Henry.

that remarkable locality, the same familiar call and immediately started in search of the bird which produced it. It was soon discovered, perched on the summit of a large grease-wood bush, but at our approach immediately took wing, and, notwithstanding every artifice and caution on our part, kept out of gunshot range, although enticing us on by frequent halts, during which it perched on the topmost branch of the most prominent bushes. At each flight the peculiar rattling call referred to was uttered, so that the bird so long sought was at last before us. We were greatly surprised, however, to find that it was not the species we had supposed, but one we had never seen before."

This region, in Western Nevada, may be about the northern limit of dispersion of this geographically restricted species, the true home of the romantic *nitens* being in the warmer parts of the Colorado Valley. It was secured by Mr. Ferdinand Bischoff in Southern Nevada. We have accounts of its presence in various parts of California, and my knowledge of these faunal areas leads me to infer the presence of the bird in corresponding latitudes in Utah and Colorado, where advices are still lacking. The species is undoubtedly migratory from the northerly and more elevated localities, where it resides in summer, as it certainly is from such a southern, though still elevated, spot as Fort Whipple. Yet, as I ventured to say in 1866, it is doubtless a permanent resident in the southern portions of Arizona, and is consequently found over the Mexican border in winter. Dr. Heermann had already seen it at Fort Yuma late in November, and Kennerly in February and March at various points along his westward journey to the Great Colorado; and Henshaw latterly, in 1874, found it in Arizona under circumstances warranting the belief that it is resident over a considerable area in this Territory. For New Mexico, we have the observations of Dr. T. C. Henry, as well as Dr. Kennerly's. For California, Dr. Cooper's memoranda form an interesting supplement to Heermann's original entries. According to these, the shining birds are numerous on the Colorado, *especially in winter*, and are to be found along the Mojave River in *December*. Many leave the immediate valley of the river in April, in which month the late Captain Feilner found the bird at Fort Crook, California. Dr. Cooper, like the rest, attests the wildness of the bird, its trick of jutting the tail and erecting the crest, like a Flycatcher, the pains a wounded one

takes to conceal itself, and adds some other particulars, to which I shall presently refer again. I remark here, however, that he alone, besides myself, credits the bird with musical ability, speaking of its "sweet notes", as indicating its Oscine rather than Clamatorial affinities. How does it happen, by the way, that so many persons who speak of this illusive bird have nothing to say of its song?

Having seen this much of a remarkable bird, let us complete its natural history. We have yet to learn of two important matters—what the pretty creature lives upon and how it nests. Thus far, we have only seen it in the *rôle* of an expert and successful insect-hunter; but, though insects form much of its food, it seems that berries form still more. We might expect, if its assigned relationships be the true ones, to dis cover a berry-eater in this relative of asthmatic *Ampelis*. I do not know whom to credit with the discovery, but we have known for years that *nitens* is fond of various berries, like a Cedar-bird for instance, especially the fruit of the mistletoe, which grows in abundance in the regions where the birds live. Thus Dr. Cooper says:—"They prefer the vicinity of the trees on which the mistletoe grows, as its berries form much of their food during the whole year, . . ." So also Henshaw, no less explicitly, and with more detail:—"Large numbers of this species were found, on several occasions, in the cañon back of Camp Apache, Ariz. As they were noticed nowhere else in this vicinity, I judged that the abundance of mistletoe berries here served as an attraction. These they were greedily feeding upon. . . . At Camp Bowie, Ariz., large numbers were found gathered together in the cañon, attracted thither by the abundance of the berries of the *Prunus demissa* and *Vitis incisa*. Of these, the birds seemed very fond, and they appeared to constitute their sole food; though the period during which their feast lasts must be necessarily short, as each bush was fairly beset by scores of these birds, who seemed to have entered into a rivalry with the Mockingbirds to see which could bear away most of the ripe juicy fruit." Specimens procured by Mr. H. E. Dresser at Eagle Pass, Texas, had the stomach filled with the berries of a species of mistletoe that grows abundantly on the mezquites; and Captain Bendire witnesses that these birds "are always found about the mistletoe, on the berries of which they feed almost exclusively"—a rather strong statement indeed, but no doubt substantially correct.

The nidification of *nitens* has occasioned much uncertainty and confusion; thus, Dr. Brewer has described the nest and eggs as those of *Myiadestes townsendi*.* The earliest allusion to the nest of *Phœnopepla* I have seen is that made by Cooper, who states that he found a nest near Fort Mojave on the 25th of April,

* When I prepared my account of this bird for earlier pages of the present work, 12 sheets of which, up to p. 192, were printed in 1876, the eggs were still unknown. The requisite information has since been furnished by Mr. Wilbur F. Lamb, of Holyoke, Mass., whose interesting narrative I will here transcribe entire from the Bulletin of the Nuttall Ornithological Club, vol. ii. no. 3, July, 1877, p. 77.

"NEST AND EGGS OF TOWNSEND'S FLYCATCHER.—In July, 1876, while rambling with my brother over the mountains of Summit County, Colorado, it was my good fortune to find, at an altitude of about ten thousand feet, the nest of Townsend's Flycatcher (*Myiadestes townsendi*), and as no description of its eggs has yet appeared, perhaps the following may not be uninteresting: The nest was very loosely, and, externally, shabbily built of long dry grasses, straggling two feet or more below it. It was placed on the upper bank of a miner's ditch (running from the Bear River, above Breckenridge, to the Gold Run and Buffalo Flat diggings), and was partly concealed by overhanging roots; yet it was rendered so conspicuous by the loose swaying material of which it was composed, as well as by that which had become attached to the overhanging roots during its construction, as to attract the eye of an experienced collector when yet some rods away. On nearing the nest the bird immediately took flight, and alighted on the topmost branch of the nearest pine. Resting uneasily here for half a minute, it then, in short, uncertain flights, worked its way down the mountain side and out of sight. Withdrawing to a convenient cover, we had only to wait a few moments for the bird to return, perch herself on a branch a few feet from the nest, peer anxiously into it, and then quickly resume her task of incubation. Moving cautiously along the bank above the ditch, we tried to capture the bird by placing a hat over the nest, but, miscalculating its location by a few inches, the bird eluded the stroke and made good her escape, as she did also on our second attempt to capture her. Again retreating to cover, we waited for half an hour for the bird to return, when suddenly we espied it flying from branch to branch, displaying by its restless motions more anxiety and suspicion than before, yet constantly working nearer its home, which it soon reached and settled quietly again to business. After the last unsuccessful attempt to catch the bird, a stick was placed on the bank directly over the nest, to mark its exact locality, and this time moving with less haste and more caution, we gained the desired position, lay down on the bank, and taking a hat in each hand quickly covered the opening and secured the unfortunate bird, and also the opportunity of giving to ornithologists an authentic account of the number, size, and coloration of the eggs. The nest contained four eggs, very closely resembling those of the Shrikes. The ground color is dull white or bluish, thickly blotched or freckled with reddish-brown. The measurements of the three specimens preserved are 1.01 by .66, .94 by .68, and .88 by .66. Incubation had been going on for about ten days, and unfortunately one egg was destroyed in cleaning."

which was built on a mezquite branch twelve feet from the ground. He gives no further particulars. Dr. Brewer describes this find in detail, and gives an account of the two eggs it contained in the first volume of the "History of North American Birds", page 407. About the time that this notice appeared, Dr. Brewer described in the Boston Natural History Society's Proceedings, a nest and contents received from Captain Bendire, but unluckily called its owner "*Myiadestes townsendi*", instead of *Phænopepla nitens*. As we now know the nest and eggs of *Myiadestes*, there is no question about the blunder. Recurring to the subject for the third time, in the Appendix (vol. iii, p. 507) of the "History", Dr. Brewer redescribed Bendire's material, though in somewhat discrepant terms.

Passing by the notice of Dr. Cooper's nest as not free from suspicion, though most probably authentic, I present the other two, both based upon the Bendire material. Says Dr. Brewer:—

"The nest was found May 12th, 1872, built in a low tree. It was a shallow, nearly flat structure, and contained two eggs. These eggs are of very peculiar and well-marked characteristics, resembling no other egg that I can now call to mind. They are of an oblong oval shape, tapering slightly towards one end, and measure, one .90 of an inch in length by .62 in breadth, the other .90 by .70 of an inch. Their ground color is a dull white, slightly tinged with green, and strongly marked over the entire egg with small, but distinct spots of a dark purplish brown, so dark as to be only distinguishable from black in a strong light. Interspersed with these markings are other fine dottings, less distinct and of a lighter shade, and of a dark slate color, with a slight reflection of lilac. The nest and eggs closely correspond with a nest and contents, taken by Dr. Cooper."—(From Proc. Bost. Soc. xvi. 109.)

"The nest is saddled on a horizontal branch, generally of a mezquite-tree. It is a shallow structure, about 4 inches across; its diameter is 2½ inches, depth ½ an inch. It is composed of fine sticks, fibres of plants, and lined with a little cottonwood down and a stray feather. The first nest was found May 16. This was principally lined with the shells of empty cocoons. The number of eggs was two. Though he [Captain Bendire] found more than a dozen nests with eggs and young, he never found more than two in a nest. Their ground color varies from a greenish-white to a lavender and a grayish-white, spotted

all over with different shades of brown. The spots are all small, and most abundant about the larger end, and vary greatly in their distributions. In size they [*i. e.* the eggs, not the spots] range from .97 of an inch to .84 in length, and in breadth from .66 to .60."—(From Hist. NAB. iii. 507.)

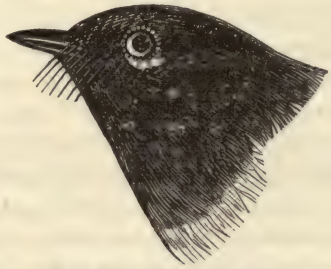

FIG. 51 *bis.*—*Setophaga picta.*
(Omitted from p. 335, *q. v.*)

CHAPTER XVI.—GREENLETS

Fam. VIREONIDÆ

Char.—Small dentirostral Oscines, related to the Shrikes, with ten primaries and extensively coherent digits. Bill shorter than head, moderately or very stout, compressed, distinctly notched and hooked at tip. Rictus with conspicuous bristles. Nostrils exposed, overhung with a scale; the short, bristly and erect frontal feathers reaching to the nasal fossæ. Wing of variable shape, of *ten* primaries, the 1st short and spurious, one-half or less the length of the 2d, in one small group rudimentary, displaced, and apparently wanting. Tail rather short, nearly even, of narrow feathers. Tarsi Oscine, the lateral laminæ being entire except at base below, the anterior aspect scutellate; not shorter than the middle toe and claw. Toes soldered at base for the whole length of the basal phalanx of the middle digit, which is united with the basal joint of the inner digit and basal and next joint of the outer one; these coherent phalanges very short. Size small; coloration simple, oftenest greenish; young not spotted or streaked.

"In the adhesion of the toes at their bases there is some resemblance to the *Troglodytidæ*, but their structure is different. In the latter family the joints are lengthened, the basal of the middle, about as long as the 1st and 2d of the outer, and equal to or a little longer than the basal inner. In *Vireonidæ* the basal joints are abbreviated; the basal of the middle about equal to one and a half joints of the outer, and not quite as long as the basal inner. This difference is, perhaps, related to the more or less terrestrial habitat of the one, and the strictly arboreal of the other. In *Vireonidæ*, too, there is a greater tendency to having three rows of scales on the upper part of the palm, on the three toes respectively, instead of having the outer two rows united more into a single series."—(*Baird.*)

The members of this group, for the most part, used to form a portion of the extensive family of the Shrikes (*Laniidæ*), chiefly on account of the stout hooked and notched bill; but

they may, I think, be properly dissociated, and form a family by themselves. Some of the less typical extralimital forms have occasionally been referred to the *Tanagridæ*, with which nine-primaried Oscines, however, no relationship is obvious. The genus *Icteria* is still associated by some leading ornithologists with the Vireonines, but this form seems decidedly Tanagroid or Sylvicoline. As here constituted, the *Vireonidæ* are a family peculiar to America, comprising six or seven genera and some seventy alleged species, an unusual proportion of which appear to be well established. *Vireo*, in its broad sense, is the typical and principal genus, the only one found in North America, and characteristic of that country, though many other species occur in Middle and South America. The leading extralimital genera are *Hylophilus*, *Cyclarhis*, and *Vireolanius*, each of a number of species of Mexico and Central and South America. *Neochloe brevipennis* is a special Mexican form. *Laletes osburni* is peculiar to Jamaica, being the only exclusively West Indian genus, though several species of *Vireo* are confined to the Antilles. To complete the list, I should mention the lately described *Phœnicomanes iora*, of the West Indies,* considered by Sharpe and Sclater as related to *Phœnicophilus*. The notable genus *Dulus*† is by some placed in *Vireonidæ*, by others referred to *Ampelidæ*.

FIG. 51.—A Vireo (*V. gilvus*).

I continue as heretofore to refer all the North American species to the single genus *Vireo*, for reasons given under the following head.

Genus VIREO Vieillot

Muscicapa, p., of earlier authors.

Vireo, *Vieill.* Ois. Am. Sept. i. 1807, 83. (Type *Muscicapa noveboracensis* Gm.)—*Bd.* Rev. AB. 1866, 350 (monographic).

Vireosylva, *Bp.* Comp. & Geog. List, 1838, 26 (evidently intended for *Vireosylvia*). (Type *Muscicapa olivacea* L.)—*Bd.* Rev. AB. 1866, 326 (monographic).

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* 1874. SHARPE, R. B. On a new Genus and Species of Bird from the West Indies. < *P. Z. S.* xlii. 1874, pp. 427, 428, woodcc. pl. liv.

Phœnicomanes iora. Considered related to *Phœnicophilus*, and referred with the latter to *Vireonidæ* rather than *Tanagridæ*.

† 1851. LAFRESNAYE, F. DE. Sur l'oiseau nommé par Brisson Tangara de Saint-Domingue, Tanagra Dominicensis, Tanagra Dominica, par Linné, figuré par Buffon, pl, enl. 156, f. 2, et dont Vieillot a fait son genre Esclave (Dulus), sous le nom de Dulus palmarum. < *Rev. et Mag. de Zool.* iii. 1851, pp. 583–590.

Phyllomanes, *Cab.* Arch. f. Naturg. 1847, Bd. i. 321; Mus. Hein. 1850, 63 (substituted for *Vireosylvia*).
Lanivireo, *Bd.* BNA, 1858, 329. (Type *Vireo flavifrons* V.)
Vireonella, *Bd.* Rev. AB. 1866, 326. (Type *Vireo gundlachi* Lemb.)

Bill like that of a Shrike in miniature, moderately or very stout, shorter than the head, compressed at least toward the end, distinctly hooked and notched at the tip, sometimes with trace of a tooth behind the notch of the upper mandible, and usually a nick in the under mandible too. Rictal bristles conspicuous, and others present among the frontal and mental feathers. Nasal fossæ nearly filled with short erect feathers. Toes extensively coherent at base, as explained under head of the family; lateral toes of unequal lengths; claws stout, narrowly compressed, much curved and acute. Wings at least as long as the tail, more or less rounded; sometimes much longer and quite pointed; of ten primaries, the 1st usually evident, though short and spurious, but sometimes (in the section *Vireosylvia* and in *Vireo flavifrons*) rudimentary and more or less completely concealed (exceptionally obvious even in these species). Tail short, even, of narrow feathers. Size small; length usually five or six inches. Coloration simple; above olivaceous or grayish, the crown like the back, or ashy (in one case brown, in another black), the under parts white, or white and yellow, or partly olivaceous. Sexes alike indistinguishable; young similar, not spotted or streaked. Migratory in North America. Insectivorous, arboricole. Nest pendulous; eggs white, spotted.

The Vireos were long supposed to be in the curious case, that some species possessed ten primaries, and others only nine—certainly a remarkable circumstance, considering how constant the number of primaries is among Oscines, and how distinctive of great groups this character is.

Baird first showed that all the supposed nine-primaried species have really the full number, ten; the first being reduced to the extreme of the spurious state, in which it is usually entirely hidden from view, and even displaced to the outer side of the next quill, on the base of which it rests like a duplicate of one of the tiny coverts of the point of the pinion. Such is normally the case in *Vireo flavifrons*, in *V. philadelphicus*, and in all the species of the *V. olivaceus* group (*Vireosylvia*). We have lately, however, discovered that even *V. olivaceus* may possess an obvious spurious primary, fully exposed in the normal position. Thus, in a specimen before me as I write, kindly submitted to

my inspection by Mr. J. A. Allen, the spurious primary is conspicuously displayed, exposed for a third of an inch.*

* Believing this to be an important matter deserving of further investigation, I was not long since led to examine the general question, with satisfactory results. I verified Professor Baird's observations in many more cases, extending them to include all our North American families excepting perhaps *Laniidæ* (in *Lanius*) and *Ampelidæ* (in *Ampelis*). The clue to the search for the apparently wanting primary was given by Baird (Review, pp. 160, 325), from which it appears that in all those Vireos which seem to have only nine primaries, *two* little feathers, distinct in size and shape and somewhat so in position, are found at the base of the supposed first primary; while in Vireos, with obviously ten primaries, there is only one such little feather. With the possible exception of *Ampelis* and *Lanius*, in which I did not make out the state of the parts satisfactorily, I find that in all of the numerous North American genera examined, those of ten primaries show but one of these little feathers, while the rest have two. In the family *Alaudidæ*, as in *Vireonidæ*, some genera have ten primaries, others apparently only nine; and in our genus *Eremophila*, in which only nine are developed, there are two of the little feathers just mentioned, the overlying one being exactly like one of the primary coverts, the other, though not very similar, more resembling an abortive primary. *Alauda arvensis*, which shows a minute but obvious spurious quill, has but one such little feather; and in *Galerita cristata*, with a spurious quill about two-thirds of an inch long, there is likewise but one. In Clamatorial *Passeres*, perhaps without exception, there are ten fully developed primaries, the first of which may equal or exceed the next in length; and in the single North American Clamatorial family, *Tyrannidæ*, I find, as before, only one of these little feathers. In a Woodpecker, remarkable among Picarian birds for possessing only nine long primaries, the first being short or spurious, there is also but one.

It thus seems to be established that among supposed nine-primaried birds, the additional one, making ten in all, is normally represented by the second one of these tiny quills which overlie the base of the outermost fully developed feather; it being this same little quill which in ten-primaried *Oscines*, in *Clamatores*, and probably other birds, comes to the front and constitutes the first regular primary, either remaining quite short, when it is the so-called "spurious" primary, or lengthening to equal or exceed the other primaries in extent.

It becomes an interesting question whether *both* of these minute quills be not rudimentary primaries, as one of them certainly is. I have failed to detect any material difference between the two in *size*, *shape*, or *position*. One overlies the other, indeed, as a covert should a primary, but the two are together inserted side by side on the upper side of the first fully developed quill; both are rigid and acuminate, more like primaries than like coverts, and both are abruptly shorter than the true primary coverts. So far, all the evidence favors the supposition that *both* are rudimentary primaries. On the other hand, coloration is against such hypothesis, as in the original case of *Vireo flavifrons*, in which Baird determined the underlying one of these two little feathers to be the missing primary, mainly because it was colored like the primaries, the overlying one resembling the coverts in colora-

The history of the genus began in 1807, when Vieillot established *Vireo* upon species which had been referred by earlier authors to *Muscicapa*—as *MM. noveboracensis* and *olivacea*—and described the new species "Muscicapa" *gilva*, "M." *altiloqua*, and *Vireo flavifrons*, besides renaming the two earlier species, which he called respectively *Vireo* "virescens" and *Vireo* "musicus". It is curious that, in establishing the genus *Vireo*, he should thus have, nevertheless, described two Vireos as "Muscicapa". In 1810, Wilson named "Muscicapa" *solitaria*, "melodia", "sylvicola", and "cantatrix"; the first of these holds, but the other three are respectively the same as *gilvus* V., *flavifrons* V., and *noveboracensis* Gm.; the name *cantatrix* is derived from Bartram, 1791. An extralimital species was named *bartramii* by Swainson in 1831, under the wrong impression that it was North American; the name gave trouble, and was not eradicated from our lists until 1866. In 1838, Bonaparte first proposed to divide the genus into *Vireosylva* and *Vireo*, basing the former name on the long-billed, long-winged *V. olivaceus*, with apparently only nine primaries. *Vireosylva*, by which Bonaparte doubtless meant to say *Vireosylvia* (as G. R. Gray wrote in 1848), was changed by Cabanis in 1847 into *Phyllomanes*, for no obvious reason. Audubon added one species, *V. belli*, in 1844. In 1848, William Gambel added a species (the subsequent *barbatulus*) to our fauna under the name of *altiloquus*. Cassin gave a monographic sketch of the genus in 1851,* adding three new species, *V. huttoni*, *V. phila-*

tion. But the color test is often inapplicable, coverts and primaries being usually like each other in this respect, and color sometimes points the other way. Thus, in *Sitta carolinensis*, a ten-primaried Oscine with spurious first primary, the single remaining little feather is white at base across both webs, like the primaries, the true primary coverts being white only on the inner web.

The subject is further discussed in my paper, from which this note is extracted, "On the Number of Primaries in Oscines", <*Bull. Nutt. Ornith. Club*, i. no. 3, Sept. 1876, pp. 60–63. See also the following:—

1878.—Batchelder, C. F. Spurious Primaries in the Red-eyed Vireo [Vireo olivaceus]. <*Bull. Nutt. Ornith. Club*, iii. no. 2, Apr. 1878, pp. 97, 98.

The writer has apparently measured the quill from the carpal joint, giving dimensions much above those of the exposed portion of the feather.

*1851. Cassin, J. Sketch of the Birds composing the genera Vireo, Vieillot, and Vireosylvia, Bonaparte, with a List of the previously known and descriptions of three new species. < *Proc. Acad. Nat. Sci. Phila.* v. 1851, pp. 149–154, pll. x, xi.

Vireo, 5 spp.; *V. huttoni*, p. 150, pl. x. f. 1, sp. n. *Vireosylvia*, 6 spp.; *V. flavoviridis*, p. 152, pl. xi.; *V. philadelphica*, p. 153, pl. x. f. 2, spp. nn.

delphica, and *V. flavoviridis*, the second of these being afterward made the subject of several special papers.* The following year, Dr. S. W. Woodhouse described the remarkable *V. atricapillus*, and Cabanis shortly afterward (1855) separated the Floridan *barbatulus* by name from the Antillean species, with which it had before been confounded. John Xantus dedicated a new species to Cassin in 1858; and in that year Baird gave a new recension of the genus, which he divided into *Vireosylvia*, *Vireo*, and *Lanivireo*, basing the last name on *V. flavifrons;* he also described the Western form of *gilvus* under the varietal name *swainsoni*. A notable incident in the career of *Vireo* was the appearance of one of its species in England, as recorded in 1864.† In 1866, I increased the number of known species by three, discovered in Arizona—*plumbeus*, *vicinior*, and *pusillus;* and the same year appeard that portion of Baird's "Review" treating of the *Vireonidæ*—for Sclater had raised *Vireo* and its allied genera to the rank of a family in 1862. In this notable monograph, by far the most elaborate and satisfactory we possess, Baird rearranged the subdivisions of *Vireo*, and added a fourth subgenus, *Vireonella*, based upon the Cuban *V. gundlachi*. He added no North American species, but described several new extralimital ones, which, with others already and since described, form the complement of the genus *Vireo* as now known to us.

But the various attempts which have been made to subdivide the genus have met with only a *succès d'estime*—in fact, the species of *Vireo* seem scarcely susceptible of grouping in subgenera without some violence, especially since we have

* 1857. BREWER, T. M. [On the characters, habits and distribution of Vireosylvia philadelphica of Cassin.] < *Proc. Boston Soc. Nat. Hist.* i. 1857, pp. 108–111.

Including a letter from Th. Kumlein, of Wisconsin.

1876. DEANE, R. The Philadelphia Vireo [V. philadelphicus] in New England. < *Bull. Nuttall Ornith. Club*, i. no. 3, Sept. 1876, p. 74.

Summary of its recorded occurrences there.

1877. FOX, W. H. Capture of the Philadelphia Vireo [V. philadelphicus] in New Hampshire. < *Bull. Nutt. Ornith. Club*, ii. no. 3, July, 1877, p. 78.

†1864. BROWN, E. Occurrence of the Redeyed Flycatcher [Vireo olivaceus] in England. < *Zoologist*, xxii. 1864, pp. 8965–8967.

Extracted from "Natural History of Tutbury", p. 385.

1864. HADFIELD, H. Notes on the Redeyed Flycatcher [Vireo olivaceus]. < *Zoologist*, xxii. 1864, pp. 9020, 9021.

learned that all are really 10-primaried. The most obvious distinction is that which Bonaparte originally acted on in proposing to range under "Vireosylva" such specimens as *olivaceus;* but the arbitrary discrimination between those with an obvious spurious quill, and those in which the 1st primary is rudimentary, separates such intimately related species as *gilvus* and *philadelphicus*, while it unites others as distinct as *flavifrons* is from *olivaceus* in most respects. I am led to return all the Vireos under the original head, in view of the fact that almost every single species has its own particular details of form as well as of color. The specific characters in this group are for the most part very constant and tangible, though requiring in many cases nice discrimination, so curiously interrelated are these birds.

They are an interesting and agreeable tribe of little birds, simply-colored, in harmony with the foliage amidst which they live, and numerous enough, both in species and in individuals, to form a marked feature of our sylvan *Ornis.* Most of the Greenlets, including all the larger species, as the Red-eyed, the Blue-headed, the Yellow-throated, and the Warbling Vireos, inhabit high open woods, and the shade-trees of our parks, lawns, and public streets; while the smaller ones, like the White-eye of the East, and Bell's, and the Least Greenlet, live down in the shrubbery with the Chats, Thrashers, and Cat-birds. Being mainly insectivorous, though they also feed on berries, they are migratory in our country, and appear with all the periodicity of the Warblers themselves; different Vireos nestle anywhere in the United States, and some of them are among our most numerous and conspicuous summer visitors; few go much, if any, beyond the United States, and only exceptionally reach high latitudes. They are very agile and industrious birds, indefatigable in the pursuit of insects, nervous and highly animated in bearing, voluble and versatile in song, each kind having its own musical accomplishments. Though insignificant in size, Greenlets are spirited birds—the plucky little Red-eye, for instance, will defend itself when wounded with all the courage of a Hawk; and some of the most touching scenes I have ever witnessed among the birds have been those when Greenlets sought to protect, encourage, and sympathize with a stricken mate. The Greenlets all build one style of nests, a rather slight and thin-walled, but neat and compact, pensile, cup-like structure, suspended from the fork of a twig; and the

eggs are alike white, rather sparsely but sharply speckled with dark markings.

Many species of *Vireo*, unknown to the United States, inhabit Mexico, the West Indies, and Central and South America as far at least as La Plata, some of them having a closely restricted geographical range. The thirteen North American species, in the main, are divided, like the Dendrœcas, into Eastern and Western sets of species, the former being *V V. barbatulus*, *olivaceus*, *solitarius*, *flavifrons*, *gilvus*, *philadelphicus*, *noveboracensis;* the latter are *plumbeus*, *vicinior*, *huttoni*, *belli*, *pusillus*, *atricapillus*, to which *cassini* may be added if substantiated as a species. But *gilvus* is represented throughout the West by a very slightly different variety, *swainsoni;* undoubted examples of *solitarius* occur on the Pacific side, *olivaceus* has been found in Utah, and *noveboracensis* west to the Rocky Mountains, while *belli* occurs as far east as Illinois. *V. atricapillus* is known within our limits only from Texas, *barbatulus* from Florida, and none fewer than four, namely, *plumbeus*, *vicinior*, *huttoni*, and *pusillus*, seem confined to the Southwest. An addition to these, *V. flavoviridis*,* has been admitted to our fauna, and may be expected to occur over our southern border.

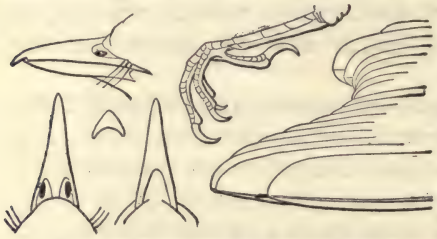

FIG 52.—*Vireo flavoviridis*, natural size.

In the following pages I take note of all the North American species, giving synonymy and habitat in all cases, with descriptive and biographical matter relating to those of the Colorado Basin; all the species but one being illustrated with details of structure of the wing and bill. The figures I am permitted to

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* **Vireo flavoviridis.—Yellow-green Vireo.**

Vireosylvia flavoviridis, *Cass.* Pr. Phila. Acad. 1851, 152, pl. xi (Panama).—*Scl.* PZS. 1856, 298 (Mexico).—*Scl.* PZS. 1859, 375 (Oaxaca).—*S. & S.* Ibis, 1859, 12 (Guatemala).—*Scl.* Cat. AB. 1861, 44.—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 323 (New Grenada).—*Bd.* Rev. AB. 1866, 336, fig.—*Salv.* PZS. 1867, 137 (Veragua).—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 96 (Costa Rica).—*v. Frantz.* J. f. O. 1869, 295 (Costa Rica).—*Salv.* PZS. 1870, 184 (Veragua).—*B. B. & R.* NAB. i. 1874, 366, fig.—*Lawr.* Bull. Nat. Mus. 1876, 17 (Tehuantepec).

Vireo flavoviridis, *Bd.* BNA. 1858, 332.—*Coues,* Key, 1872, 120, f. 61.

Phyllomanes flavoviridis, *Cab.* J. f. O. 1861, 93 (Costa Rica).

Since this article was prepared, and too late for the textual modification required to treat formally of the species, its actual occurrence in Texas has been announced. (Bull. Nutt. Ornith. Club, iii. no. 3, July, 1878, p. 152.)

use, as I did in the "Key", through Professor Baird's kindness, they having been originally prepared with reference to his "Review".

The North American species of *Vireo* may ordinarily be distinguished by the following

Analysis of Species

A. Primaries apparently only 9, the 1st being rudimentary and usually concealed or displaced (occasionally quite visible).
1. Throat and breast rich yellow ..... V. FLAVIFRONS.
2. Throat and breast white.
a. Crown ashy, black-edged.
aa. Back olive; sides of chin streaked ..... V. BARBATULUS.
bb. Back olive; no streaks on chin ..... V. OLIVACEUS.
b. Crown ashy, not black-edged, quite like the back, V. PHILADELPHICUS.
B. Primaries evidently 10, the 1st being obvious, though short and "spurious".
3. Crown black ..... V. ATRICAPILLUS.
4. Crown not black.
c. 1st primary at least ½ as long as 2d, and wing 2½ inches long. V. VICINIOR.
d. 1st primary not ½ as long as 2d; *or*, wing not 2½ inches long.
cc. Wing-bands wanting: coloration as in *philadelphicus* ... V. GILVUS.
dd. Wing-bands present: length over 5 inches.
e'. Back olive, contrasting with ashy-blue crown .... V. SOLITARIUS.
f'. Back plumbeous, crown scarcely different ..... V. PLUMBEUS.
ee. Wing-bands present: length 5 inches or less.
g'. Wing equal to tail, 2¼ inches; 1st primary ½ as long as 2d. V. PUSILLUS.
h'. Wing longer than tail; crown ashy; chin and superciliary line white ..... V. BELLI.
i'. Wing longer than tail; crown olive; chin white; superciliary line yellow ..... V. NOVEBORACENSIS.
k'. Wing longer than tail; crown olive; chin and under parts yellowish ..... V. HUTTONI.

The following North American species are not known to occur in the Colorado Basin:—

Vireo calidris barbatulus.—Moustached Greenlet.

Vireo gilvus, *D'Orb.* La Sagra's Cuba, 1839, 43. (Not of Authors.)
Vireo longirostris, *? Nutt.* Man. i. 2d ed. 1840, 359.
Vireo altiloquus, *Gamb.* Pr. Phila. Acad. 1848, 127 (Florida).—*Bd.* BNA. 1858, 334, excl. syn. (Florida). (Not *Muscicapa altiloqua* of Vieillot.)
Vireosylvia altiloqua, *Cass.* Pr. Phila. Acad. 1851, 152 (Florida).—*Cass.* Illust. 1853–4, 221, pl. 37 (partly; includes true *altiloquus*, "Florida").—*Bry.* Pr. Bost. Soc. vii. 1859, 113 (Bahamas).—*Albrecht*, J. f. O. 1861, 206 (Cuba).
Vireosylva altiloqua, *Bd.* Rep. Great Salt Lake, 1852, 328 (Florida).
Vireo virescens, *Poey?* (Cuba. Either this or *olivaceus*. Not of Vieill.)
Vireo olivaceus, *Thienemann*, J. f. O. 1857, 147 (Cuba; egg).

Phyllomanes barbatulus, *Cab.* J. f. O. 1855, 467 (Cuba).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Gundl.* J. f. O. 1861, 324, 404 (Cuba).

Vireosylvia barbatula, *Bd.* Rev. AB. 1866, 331, f. 25958 (Cuba, Bahamas, and Florida).

Vireo altiloquus *var.* **barbatulus,** *Coues,* Key, 1872, 120, f. 60 (Cuba, Bahamas, and Florida).

Vireosylvia calidris *var.* **barbatulus,** *B. B. & R.* NAB. i. 1874, 360, pl. 17, f. 1 (Cuba, Bahamas, and Florida).

Viréon verdâtre, *D'Orb.* l. c.

Black-whiskered Vireo, Whip-tom-kelly, *Coues,* l. c.

Florida Greenlet, *B. B. & R.* l. c.

HAB.—Cuba; Bahamas; Florida.

NOTE.—The Black-whiskered Vireo, or "Whip-tom-kelly", which occurs in Florida, has been identified with the species of Cuba and the Bahamas, the first distinctive name of which appears to be *barbatulus* of Cabanis, 1855, applied to the Cuban bird. It had before been well known, under a variety of names, even excluding those pertaining to the other variety (*calidris* of Jamaica, &c.). If we may presume Nuttall to have meant this species, he called it *V. longirostris* (Man. i. 2d ed. 1840, 359), supposing it to be the *V. longirostris* of Swainson, FBA. ii. 1831, 237, which, however, is the true *V. altiloquus.* Gambel attributed it to this country, under the erroneous name of *V. altiloquus,* which is the other variety of Jamaica, &c. (*Vireosylvia altiloqua, Bp.* CA. i. 1850, 320; *Scl.* PZS. 1861, 72; *March,* Pr. Phila. Acad. 1863, 294). Some have also noticed it under the name of *Vireosylvia altiloqua*—the original *Muscicapa altiloqua* of Vieillot, OAS. C7, pl. 38 (St. Domingo), having been pretty generally applied to the West Indian Black-whiskered Vireos. This is also probably the species meant by Professor Poey's Cuban *V. virescens,* and certainly the one whose eggs Thienemann describes as those of *V. olivaceus.* In 1866, Professor Baird restricted the Linnæan name *Motacilla calidris* to the ordinary bird of Jamaica, &c., adopting Cabanis's term *barbatulus* for the present species. *M. calidris* appears in the 10th ed. 1758, 184, n. 2; as used in the 12th ed. 1766, 329, n. 2, it is compounded of *Edwards's* plate 121, fig. 2, *Sloane,* Jam. ii. 299, *Ray,* 184, n. 27, and *Briss.* App. 101, though the balance of evidence enables us to follow Baird in restricting the name. In 1872, I reduced *barbatulus* to the grade of a race of "altiloquus", which course was endorsed by Baird and Ridgway in 1874; and I now think it best to follow Baird in his interpretation of the applicability of the Linnæan term *calidris* to the stock-species.

FIG. 53.—*Vireo barbatulus,* natural size.

Vireo philadelphicus.—Brotherly-love Greenlet.

Vireosylvia philadelphica, *Cass.* Pr. Phila. Acad. 1851, 153, pl. 10, f. 2 (Philadelphia).—*Brew.* Pr. Bost. Soc. vi. 1857, 109 (Wisconsin; habits).—*S. & S.* Ibis, 1859, 12 (Guatemala).—*Bd.* Rev. AB. 1866, 340, fig.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 96 (Costa Rica).—*v. Frantz.* J. f. O. 1869, 295 (Costa Rica).—*Allen,* Am. Nat. iii. 1869, 504.—*Salv.* PZS. 1870, 184 (Veragua).

Vireosylva philadelphica, *Bd.* Rep. Great Salt Lake, 1852, 328.

Vireosylvia philadelphicus, *B. B. & R.* NAB. i. 1874, 367, pl. 17, f. 4.—*Brew.* Pr. Bost. Soc. xvii. 1874, 440 (New England).

Vireo (Vireosylvia) philadelphicus, *Ridgw.* Ann. Lyc. N. Y. x. 1874, 370 (Illinois).

Vireo philadelphicus, *Bd.* BNA. 1858, 335; ed. of 1860, pl. 78, f. 3 (Wisconsin and Ohio).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 365, 374.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 410.—*Hamlin,* "Rep. Maine Board of Agric. 1865, —" (Waterville, Me.; first New England record).—*Coues,* Pr. Ess. Inst. v. 1868, 277.—*Allen,* Mem. Bost. Soc. i. 1868, 517 (Illinois).—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19 (rare).—*Coues,* Key, 1872, 120, f. 62.—*Coues,* BNW. 1874, 97.—*Wheat. apud Coues,* BNW. 1874, 233.—*Gentry,* Life-Hist. 1876, 218.—*Brewst.* Bull. Nutt. Club, i. 1876, 19 (Cambridge, Mass.).—*Fox,* Bull. Nutt. Club, ii. 1877, 78 (New Hampshire).—*Langdon,* List B. Cincinnati, 1877, 7 (Ohio).—*Minot,* BNE. 1877, 159.—*Merr.* Trans. Conn. Acad. iv. 1877, 33 (Connecticut, "undoubtedly").

FIG. 54.—*Vireo philadelphicus,* natural size.

Vireosylvia cobanensis, *Scl.* PZS. 1860, 463 (Coban, Vera Paz).—*Scl.* Ann. Mag. N. H. 1861, 328 (same).

Brotherly-love Vireo, *Coues,* ll. cc.

Philadelphia Greenlet, *B. B. & R.* l. c.

Philadelphia Vireo, *Deane,* Bull. Nutt. Club, i. 1876, 74 (*résumé* of New England record).

HAB.—Eastern North America. North to Hudson's Bay. South to Central America. No Mexican or West Indian record. The Mississippi Valley appears to be the main line of migration of this species, where it is much more numerous than it seems to be in the Atlantic States or New England; it is not recorded from any part of the West.

Vireo flavifrons.—Yellow-throated Greenlet.

? Muscicapa ochroleuca, *Gm.* SN. i. 1788, 946, n. 29.—*Turt.* SN. i. 1806, 581.—*Lath.* IO. ii. 1790, 489, n. 89.—*Steph.* Gen. Zool. x. 1817, 376 (quotes *M. sylvicola* Wils.).—*V.* N. D. d'H. N. xxi. 471.—*V.* EM. ii. 1823, 814.

? Sylvia ochroleuca, *V.* N. D. d'H. N. xi. 1817, 187.—*V.* Ency. Méth. ii. 1823, 446, n. 96 (quotes *Muscicapa ochroleuca* Gm., & Penn. AZ. n. 276).

? Mniotilta ochroleuca, *Gray,* G. of B. i. 1848, 195.

Vireo flavifrons, *V.* OAS. i. 1807, 85, pl. 54.—*Bp.* Journ. Phila. Acad. iv. 1824, 174.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 70.—*Nutt.* Man. i. 1832, 302.—*Aud.* OB. ii. 1834, 119, pl. 119.—*Bp.* CGL. 1838, 25.—*Aud.* Syn. 1839, 160.—*Peab.* Rep. Orn. Mass. 1839, 298.—*Aud.* BA. iv. 1842, 141, pl. 238.—*Gir.* BLI. 1844, 159.—*Bp.* CA. i. 1850, 330.—*Cass.* Pr. Phila. Acad. 1851, 149.—*Hoy,* Pr. Phila. Acad. 1853, 309 (Wisconsin).—*Read,* Pr. Phila. Acad. 1853, 398 (Ohio).—*Woodh.* Rep. Zuñi & Colo. R. 1853, 75.—*Thomps.* Vermont, 1853, 77.—*Gundl.* J. f. O. 1855, 468 (Cuba).—*Pratten,* Tr. Ill. Agric. Soc. i. 1855, 603.—*Putn.* Pr. Ess. Inst. i. 1856, 213.—*Scl.* PZS. 1857, 227 (Vera Cruz).—*Maxim.* J. f. O. 1858, 188.—*Bd.* BNA. 1858, 341.—*S. & S.* Ibis, 1859, 12 (Guatemala).—*Scl.* PZS. 1860, 251 (Orizaba).—*Cab.* J. f. O. 1860, 405 (Costa Rica).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Lawr.* Ann. Lyc. N. Y. vii. 1861, 323 (New Grenada).—*Gundl.* J. f. O. 1861, 404 (Cuba).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 365.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 410.—*Verr.* Pr. Ess. Inst. iii. 1862, 157.—*Hoy,* Smiths. Rep. for 1864, 1865, 437 (Missouri).—*Hamlin,* "Rep. Maine Board Agric. 1865" (Waterville, Me.).—*McIlwr.* Pr. Ess. Inst. v. 1866, 87 (Canada West).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*Coues,* Pr. Ess. Inst. v. 1868, 278 (New England).—*Coues,* Pr. Bost. Soc. xii. 1868, 111 (South Carolina).—*Turnb.* B. E. Pa. 1869, 27; Phila. ed. 20.—*Wyatt,* Ibis, 1871, 324 (Pirieo).—*? Trippe,* Pr. Ess. Inst. vi. 1871, 117 (Minnesota?).—*Parker,* Am. Nat. v. 1871, 168.—*Gundl.* J. f. O. 1872, 403 (Cuba).—*Coues,* Key, 1872, 121, f. 65.—*Scott,* Pr. Bost. Soc. xv. 1872, 224.—*Snow,* B. Kans. 1873, 5 (breeding).—*Trippe,* Pr. Bost. Soc. xv. 1873, 236 (Iowa).—*Coues,* BNW. 1874, 99.—*Snow,* B. Kans. 3d ed. 1875, 6 (Kansas).—*Gentry,* Life-Hist. 1876, 221.—*Minot,* BNE. 1877, 153.

Vireo (Lanivireo) flavifrons, *Bd.* 1858.—*Gundl.* J. f. O. 1861, 324 (Cuba).—*Allen,* Pr. Ess. Inst. iv. 1864, 67.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 370 (Illinois).

Lanivireo flavifrons, *Lawr.* Ann. Lyc. N. Y. ix. 1868, 96 (Costa Rica).—*v. Frantz.* J. f. O. 1869, 295 (Costa Rica).—*Allen,* Bull. MCZ. ii. 1871, 279 (Florida, winter).—*B. B. & R.* NAB. i. 1874, 379, pl. 17, f. 5.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 17 (Southwestern Mexico).

Vireosylvia flavifrons, *Bd.* Rev. AB. 1866, 346, fig.—*Scl.* PZS. 1870, 184 (Veragua).

Vireo flaviflores, *Gregg,* Pr. Elmira Acad. 1870.

Muscicapa sylvicola, *Wils.* AO. i. 1808, 117, pl. 7, f. 3 (*nec* Bart.).—*Bp.* Journ. Phila. Acad. iv. 1824, 173.

FIG. 55.—*Vireo flavifrons,* natural size.

? Golden-throat Flycatcher, *Penn.* AZ. ii. 1785, 389, n. 276! (descr. orig. New York).

? Golden-throated Flycatcher, *Lath.* "Syn. Supp. 17—, 173, n. 80".—*Steph.* Gen. Zool. x. 1817, 376.

Fauvette à gorge dorée, *V.* EM. l. c. 446.

Gobe-mouche jaunâtre de New-Yorck, *V.* EM. l. c. 814.

Vireo à front jaune, *Le Moine,* Ois. Canad. 1861, 213.

Yellow-throated Vireo, Yellow-throated Greenlet, *Authors.*

HAB.—Eastern United States and British Provinces; west only to Iowa and Kansas. Breeds in most if not all of its North American range. Winters in Florida and southward, Mexico, Central America, and British Columbia. Cuba (rare).

NOTE.—It seems most likely that the proper name of this species is not *Vireo flavifrons* V., as commonly supposed, but *Vireo ochroleucus* (Gm.). For, as late critics of our nomenclature have generally failed to observe, *Muscicapa ochroleuca* of Gmelin is based on the "Golden-throated Flycatcher" of Pennant and Latham, which is described from "New York" in terms that can hardly be misunderstood, and which is doubtless the present species. This name *ochroleuca,* now indeed obsolete, was current for many years, especially with Vieillot, who reproduces it in various of his books, making of it now a "Muscicapa", now a "Sylvia"; Gray quotes it in 1848 under "Mniotilta", and Stephens even goes so far as to quote "*Muscicapa sylvicola* Wils." as its synonym! I think it as well established for the Yellow-throated Vireo as either *olivaceus* or *noveboracensis* are for their respective species—better, in fact, than *olivaceus* L. is, for that is a compound of Edwards and Catesby, and unquestionably includes two species (see Baird, Rev. p. 335). We have all accepted *noveboracensis* Gm., as based on the "Green Flycatcher" of Pennant and the "Hanging Flycatcher" of Latham, which are scarcely or not more satisfactorily identifiable with the White-eyed Vireo than this "Golden-throated Flycatcher" of the same authors is with *V. flavifrons;* and I am strongly disposed to recommend that the above name, *Vireo ochroleucus,* be adopted.

The Red-eyed Greenlet

Vireo olivaceus

Muscicapa olivacea, *L.* SN. i. 1766, 327, n. 14 (*in part;* from Cates. i. 54; Edw. v. 93; Briss. ii. 410; thus including the Jamaican bird).—*Gm.* SN. i. 1788, 938, n. 14 (*in part;* same as Linn.; also quotes Brown, Jamaica, 476).—*Lath.* IO. i. 1790, 482, n. 61.—*Turt.* SN. i. 1806, 575.—*Wils.* AO. ii. 1810, 55, pl. 10, f. 3.—*Steph.* Shaw's GZ. x. 1817, 379.—*Bp.* Journ. Phila. Acad. iv. 1824, 176.—*Brown,* Zool. 1864, 8965 (England).—*Hadfield,* Zool. 1864, 9020 (England).—*Haym.* Pr. Phila. Acad. 1853, 290.

Lanius olivaceus, *Licht.* "Verz. 1823, 49".

Vireo olivaceus, "*Vieill.*"—*Bp.* Ann. Lyc. N. Y. ii. 1826, 71.—*S. & R.* FBA. ii. 1831, 233, fig. on p. 235.—*Nutt.* Man. i. 1832, 312.—*Aud.* OB. ii. 1834, 287, pl. 150.—*Peab.* Rep. Orn. Mass. 1839, 299.—*Aud.* Syn. 1839, 162.—*Aud.* BA. iv. 1842, 155, pl. 243.—*Gir.* BLI. 1844, 157.—*Cabot,* Naum. ii. Heft iii. 1852, 65 (Lake Superior).—*Woodh.* Rep. Zuñi & Colo. R. 1853, 76.—*Hoy,* Pr. Phila. Acad. 1853, 309.—*Putn.* Pr. Ess. Inst. i. 1856, 213.—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Maxim.* J. f. O. 1858, 187.—*Bd.* BNA. 1858, 331.—*Willis,* Rep. Smiths. Inst. for 1858, 1859, 282 (Nova Scotia).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 364.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 410.—*Verr.* Pr. Ess. Inst. iii. 1862, 148.—*Verr.* Pr. Bost. Soc. ix. 1862, 138 (Anticosti).—*Boardm.* Pr. Bost. Soc. ix. 1862, 126.—*Blak.* Ibis, 1862, 5; 1863, 66 (Saskatchewan).—*Dress.* Ibis, 1865, 480 (Texas).—*Hoy,* Smiths. Rep. for 1864, 1865, 437 (Missouri).—*McIlwr.* Tr. Ess. Inst. v. 1866, 87 (Canada West).—*Coues,* Pr. Ess. Inst. v. 1868, 277.—*Coues,* Pr. Bost. Soc. xii. 1868, 111 (South Carolina).—*Coop.* Am. Nat. iii. 1869, 35.—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19.—*? Finsch,* PZS. 1870, 565 (Trinidad).—*Trippe,* Pr. Ess. Inst. vi. 1871, 117.—*Parker,* Am. Nat. v. 1871, 168.—*Coues,* Pr. Phila. Acad. 1871, 21.—*Coues,* Key, 1872, 120, f. 59.—*Allen,* Bull. MCZ. iii. 1872, 176 (mountains of Colorado, up to 11,000 feet; Ogden, Utah).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 370.—*Scott,* Pr. Bost. Soc. xv. 1872, 223.—*Trippe,* Pr. Bost. Soc. xv. 1873, 236.—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 714.—*Coues,* BNW. 1874, 96.—*Hensh.* Rep. Orn. Specs. 1874, 42 (Utah, Allen).—*Allen,* Pr. Bost. Soc. xvii. 1874, 54 (Upper Missouri River).————, Am. Nat. viii. 1874, 271.—*Hoffman,* Pr. Bost. Soc. xviii. 1877, 171 (Dakota).—*Gentry,* Life-Hist. 1876, 211.—*Minot,* BNE. 1877, 155.—*Batch.* Bull. Nutt. Club, iii. 1878, 97 (spurious primary).—*Coues,* Bull. Nutt. Club, iii. 1878, 95 (nesting).

Vireo olivacea, *Denny,* PZS. 1847, 38.

Vireo olivaceus, *Thomps.* Vermont, 1853, 77.—*Pratten,* Tr. Illinois Agric. Soc. i. 1855, 603.—*Merr.* Am. Nat. viii. 1874, 87.

Vireo olivaceus, *Gregg,* Pr. Elmira Acad. 1870.

Vireosylva olivacea, *Bp.* CGL. 1838, 26.—*Reinh.* Ibis, 1861, 7 (Greenland).

Vireosylvia olivacea, *Bp.* CA. i. 1850, 329.—*Reinh.* "Vidensk. Meddel. for 1853, 1854, 82" (Greenland).—*Cass.* Pr. Phila. Acad. 1851, 151.—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Reinh.* J. f. O. 1854, 439 (Greenland).—*Scl.* PZS. 1855, 439 (Bogotá).—*S. & S.* Ibis, 1859, 12 (Guatemala).—*Scl.* PZS. 1859, 363 (Xalapa).—*Mosley,* "N. H. Tutb. 1863, 385, pl. 6" (Derby, England, May, 1859).—*Scl.* Ibis, 1864, 394 (England).—*Bd.* Rev. AB. 1866, 333, fig.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*Lawr.* Ann. Lyc. N. Y. ix. 1868, 96 (Costa Rica).—*a Frantz.* J. f. O. 1869, 295 (Costa Rica).—*S. & S.* PZS. 1870, 836 (Honduras).—*Allen,* Bull. MCZ. ii. 1871, 270 (Florida, in winter).—*Harting,* Man. Br. B. 1872, 99 (England).—*Ridgw.* Am. Nat. vii. 1873, 198.—*Layard,* Ibis, 1873, 377 (Pará ?).

Vireosylvia olivaceus, *B. B. & R.* NAB. i. 1874, 363, pl. 17, f. 2.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.

Vireo (Vireosylvia) olivaceus, *Allen,* Pr. Ess. Inst. iv. 1864, 66.

Phyllomanes olivacea, *Cab.* Mus. Hein. i. 1850, 63.—*Cab.* J. f. O. 1860, 404 (Costa Rica).

Phyllomanes olivaceus, *Gundl.* J. f. O. 1872, 403 (Cuba).

Muscicapa sylvicola, *Bartr.* Trav. Fla. 1791, 290 *bis* (*nec* Wils.).

Vireo virescens, *Vieill.* OAS. i. 1807, 84, pl. 53 (Pennsylvania).—*Turnb.* B. E. Pa. 1869, 53; Phila. ed. 42 (same).

Vireosylvia virescens, *Cass.* Pr. Phila. Acad. 1851, 151.

Vireo bogotensis, *Bry.* Pr. Bost. Soc. vii. 1859, 227 (Bogotá).—*Lawr.* Ann. Lyc. viii. 1863, 6 (New Grenada).

Red-ey'd Fly-Catcher, Muscicapa oculis rubris, *Cates.* Car. i. 1771, 54, pl. 54 (lower fig.).
Olive-coloured Flycatcher, *Edw.* "Gl. 93, pl. 253".
Gobe-mouche de la Jamaique, Muscicapa jamaicensis, *Briss.* ii. 1860, 410, n. 27 (in part).
Red-eyed Flycatcher, *Penn.* A.Z. ii. 1785, 387, n. 271.—*Lath.* "Syn. ii. 351, n. 51".—*Steph.* Gen. Zool. x. 1817, 379.
Moucherolle olive, *Le Moine,* Ois. Canad. 1861, 160.
Red-eyed Vireo, *or* **Greenlet,** *Aud. & Authors.*

Hab.—Chiefly Eastern North America to Hudson's Bay; Greenland (*Reinhardt*). West, however, to the Rocky Mountains, and even beyond; Washington Territory (*Kennerly*); Utah (*Allen*). South to New Grenada and Trinidad (*Finsch,* PZS. 1870, 565). Cuba alone of the West Indies. In Mexico, chiefly replaced by *S. flavoviridis* (Xalapa, *Sclater*). Extremely abundant in Eastern United States. Breeds at large in its North American range, and winters from Florida southward. Accidental in England (see the references in foregoing synonymy).

Fig. 56.—*Vireo olivaceus,* natural size.

Ch. sp.—♂ ♀ *Remigibus ix. Flavo-olivaceus, alis caudâque fuscis flavo-olivaceo limbatis; infrà albus, lateribus vix virescentibus; pileo cinereo-plumbeo fusco limbato, striga superciliari alba: loris plumbeo-fuscis; iridibus rubris.*

♂ ♀: Entire upper parts and the edgings of the dusky wings and tail uniform yellowish-olive, extending on the sides of the neck and breast, but well defined against the color of the crown. No bars across ends of wing-coverts. Beneath pure white, a little shaded with greenish-yellow along the sides; no dusky maxillary stripes. Cap ashy-plumbeous, bordered on each side with a dusky line. A broad white superciliary stripe from nostrils over the eye and ear; below this a dusky loral line prolonged through the eye; lower eyelid whitish. Bill dusky plumbeous above, pale horn-color below; feet plumbeous; iris red. No obvious spurious first primary. Length, extremes, 5⅝–6¼, generally about 6; extent, 9¼–10¼; wing, 3–3⅛; tail, 2¼–2½; bill along culmen, over ½; tarsus, ⅝.

The sexes are indistinguishable, and the young resemble the old very closely. Autumnal specimens, of both old and young, are more brightly colored than old ones, with more decided yellowish-green shading on the sides below, sometimes extended on the crissum. The young have the eyes less decidedly red—rather reddish-brown. The species is readily recognized by its large size, long bill, apparently only nine primaries, no maxillary stripes, red eyes, and peculiar head-markings as above given. It is the only species of its particular sub-group known to inhabit the West, though a closely allied one, *V. flavoviridis,* has occured just over our southern border.

THE Red-eyed is a Vireo of exceeding abundance in the United States east of the Mississippi, yet one which extends to the Rocky Mountains, and even beyond them. The dispersion of this bird remains rather more extensive than that of any other of the genus, even after excepting its casual occurrences in Greenland and England. In the Antilles, which possess their own Greenlets, it is only known in Cuba, where it is rare; and it seems to be mostly replaced in Mexico by the closely-allied *V. flavoviridis*. Some representatives of the species linger in winter along our southernmost shores, but the true home of these birds at such season is in Central America, where we have advices from Guatemala, Panama, and elsewhere. Their breeding range apparently coincides with the whole of their North American range; but I think that in summer there are more Greenlets of this kind to the square mile in the Middle States than anywhere else. The Red-eyes are among the very commonest of all the birds that breed, for instance, in the District of Columbia, where, during the heat of summer, their energetic and voluble notes resound, no less than the querulous plaints of the Wood Pewees, throughout the woods. The persistency of these musicians is really remarkable; they sing at all hours, even at the listless noon, which invites most birds to rest in the shade, and prolong their nervous notes to the very end of summer, long after the exaltation of other warblers has passed away. If we watch a Red-eye, as we may easily do, in the nearest piece of wood, or in the shade-tree close by the house, we shall see him performing in a very nonchalant, almost mechanical way, as he goes about his business of fly-catching, sometimes stopping in the midst of a bar to snap at an insect, and resuming the note as soon as he has fairly cleared his throat. No one of the sylvan choir is more simple and unaffected than this modest performer, who seems to sing unconsciously or as if absorbed in reverie, while his daily work goes on.

As to the musical quality of this performance, there may be two opinions. The Red-eye belongs, as we have seen, to the section of the genus called *Vireosylvia*, and this includes *V. calidris*, a bird known in Jamaica by the curious names of "Whip-tom-kelly", or "John-to-whit", derived, like Whippoorwill, Chuck-will's-widow, and many other designations of animals, from the sound of its voice. The well-known and very true naturalist, Philip Henry Gosse, has described this curious ditty in his

wonted agreeable manner. The Jamaican Flycatchers in general, he says, "are not very vociferous, but this is pertinacious in its tritonous call, repeating it with energy every two or three seconds. . . . On the 26th of March, on my return to Bluefields, after a visit to Spanishtown, I heard its well-known voice, but my lad had noticed it a week before. From this time, every grove, I might almost say every tree, had its bird, uttering, with incessant iteration and untiring energy, from its umbrageous concealment,—'*Sweet John!—John-to-whit!—Sweet-John-to-whit!—John-t'whit!—Sweet-John-to—whit!*' I can scarcely understand how the call can be written 'Whip-tom-kelly', as the accent, if I may say so, is most energetic on the last syllable. Nor have I ever heard this appellation given to it in Jamaica.[*] After July we rarely hear '*John-to-whit*'—, but, '*to-whit—to-whoo*', and sometimes a soft, simple chirp, or *sip, sip*, whispered so gently as scarcely to be audible." All this is as applicable to the Red-eyed Greenlet, *mut. mut.*, as if it had been written for the latter—even to the criticism that 'Whip-tom-kelly' is an inept designation. Though Wilson says: "On attentively listening for some time to this bird in his full ardor of song, it requires but little of imagination to fancy that you hear it pronounce these words,"—Nuttall has, to my way of thinking, rendered the song in a much more graphic manner, in saying: ". . . the most lively or accidental fit of imagination, never yet, in this country, conceived of such an association of sounds. I have already remarked, indeed, that this singular call is, in fact, sometimes uttered by the Tufted Titmouse. When our Vireo sings slow enough to be distinctly heard, the following sweetly warbled phrases, variously transposed and tuned, may often be caught by the attentive listener: *'tshoŏe peweĕ peeaí mŭsik 'du 'dŭ 'du, 'tshoŏve 'hĕre 'hĕre, hear hère, hear hère, 'wing 'ritshard, 'p'shĕgru 'tshevŭ, 'tsheevoo, 'tshŭvee peeaït 'péroi.* The whole delivered almost without any sensible interval, with earnest animation, in a pathetic, tender and pleasing strain, well calculated to produce calm and thoughtful reflection in the sensitive mind." I witness the fidelity of this description, and I can even catch the rhythm or movement of the piece in the quaint syllables Nuttall uses, though I must confess that I fail to gain from them the slightest notion of the *timbre* or quality

* The name is traditional, having come down from the fathers: see Sloane, Browne, Edwards (who figures it unmistakably, pl. 253), and the rest.

of the notes; others perhaps, of nicer ear, may be more fortunate.

There is one point about this Greenlet (shared to some extent by other Vireos) with which collectors are doubtless as familiar as myself, but which has not been recorded in so many words. I refer to the nicety of the plumage at all seasons. There is something about the moult that keeps the bird in good order. You may shoot Red-eyes in July and August, young and old, always in fair condition for preservation, when most other birds are ragged or full of pin-feathers. The vernal birds, in their best feather, seem to be peculiarly smooth, something like the Black-throated Bunting in comparison with others of its family. I have recently learned another fact, novel to me, from a Philadelphia correspondent, Mr. W. L. Collins.* This young naturalist found a Red-eye's nest upon which the female was sitting, though the frame-work of the structure was barely completed. The male bird presently flew to the nest bringing some material in his bill, which he gave to his mate to arrange while he went after more. The nest contained at this moment three eggs, and it was not until three or four days afterward that the fabric was finished. Laying in half built nests is a common thing, however, and probably more so than we may suppose, though less often witnessed in such an instance as the present, where the pensile structure must needs be well advanced to hold the eggs securely. This Vireo keeps for the most part in high, open woods, and there forages for insects mainly among the upper branches, where we oftenest see it tripping alone, and whence its song oftenest falls on appreciative ears; but in its choice of a nesting-place it frequently descends within a few feet of the ground. The smaller trees, especially those with slender, straggling branchlets, are commonly selected, the neat cup being suspended by the brim in the embrace of a forked twig. The structure is usually very smooth and compact, as if the materials were matted or even pasted together, unlike the tough, but pliably woven, purses of the Orioles; and some have supposed, though without direct evidence as yet, that the materials are agglutinated with the saliva of the bird.

* 1878. COUES, E. Nesting of Vireo olivaceus. < *Bull. Nutt. Ornith. Club*, iii. no. 2, Apr. 1878, p. 95.

Communicated by W. L. Collins.—The bird laid in an unfinished nest, during its construction.

In any event, these nests are remarkably durable, hanging for many months after they have been deserted; and when the leaves have fallen, revealing the trees in their nakedness, these structures become conspicuous along the roadside, around the edges of clearings, and among the dogwoods and Judas-trees that form the undergrowth of our noble oak forests. Wilson says they are frequently used by mice, and that in one instance a Yellowbird built its own nest in one of these deserted homes. They are among the more frequent depositories of Cowbird eggs; and the owners seem to be as devoted as can be to the incubation of the alien eggs and subsequent care of the young. Dr. Brewer narrates that in one instance a Red-eye hatched three Cowbird eggs without laying any of her own; and gives the particulars of another case, in which a Vireo laid two eggs, and then stopped to incubate them, together with two Cowbird eggs, which had meanwhile been deposited with her own. The Vireo's eggs are usually four in number, measuring about four-fifths of an inch in length by three-fifths in breadth, and are not peculiar in shape; the shell is pure white, sparsely sprinkled with small and sharp markings of reddish-brown or dark brown, chiefly about the larger end. Two broods are often reared each season by the same pair, and such is probably the rule in the Middle and Southern States, to judge from the great abundance of the birds, as well as from the periods when newly-feathered young may be found. In the District of Columbia, where these Greenlets are extremely abundant, I used to note their arrival during the last week in April, and have observed them as late as the 25th of September, about which time they leave with one accord. Nuttall, however, has witnessed their lingering in Massachusetts even so late as the 26th of October.

It is known that this Vireo is not exclusively insectivorous, and the same is doubtless true of other Greenlets. Nuttall observed them feeding greedily on the small berries of the bitter cornel and the astringent *Viburnum dentatum*. The same author gives some pleasant gossip about a young Vireo which entered his chamber and became an inmate for a while. He soon grew reconciled to the situation, became so gentle as to take insects from the hand, and apparently used to seek protection from an irascible Kingbird, who occupied the same quarters, and who begrudged him his share of food. This Greenlet used to eat viburnum-berries with a good appetite,

and like the Flycatcher and birds of prey, regurgitated indigestible portions of his food, as the skins and seeds of berries, and the legs and wings of insects. He folded his head under his wing to sleep, and rested soundly, unlike his fellow prisoner, who was never caught asleep for the period of eight months during which he was under observation. But the little Greenlet came to an untimely end, after the custom of pet birds; and a lock of hair found in his stomach was supposed to have been the cause of his death.

Western Warbling Greenlet

Vireo gilvus swainsoni

a. gilvus

Muscicapa gilva, *V.* "OAS. i. 1807, 65, pl. 34".—*Steph.* Gen. Zool. x. 1817, 387.

Sylvia gilva, *V.* N. D. d'H. N. xi. 1817, 190.—*V.* Ency. Méth. ii. 1823, 453, n. 116.

Vireo gilvus, *Bp.* Journ. Phila. Acad. iv. 1824, 176.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 70.—*Nutt.* Man. i. 1832, 309.—*Aud.* OB. ii. 1834, 114, pl. 118.—*Bp.* CGL. 1838, 26.—*Aud.* Syn. 1839, 161.—*Aud.* BA. iv. 1842, 149, pl. 241.—*Giraud,* BLI. 1844, 161.—*Bp.* CA. i. 1850, 330.—*Hoy,* Pr. Phila. Acad. 1853, 309.—*Read,* Pr. Phila. Acad. 1853, 398.—*Woodh.* Rep. Zuñi & Col. R. 1853, 76.—*Thomps.* Vermont, 1853, App. 22.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 582.—*Pratten,* ibid. 603.—*Putn.* Pr. Ess. Inst. i. 1856, 213.—*Scl.* PZS. 1858, 302 (Oaxaca).—*Bd.* BNA. 1858, 335.—*Willis,* Smiths. Rep. for 1858, 1859, 282.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 364.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 410.—*Blakist.* Ibis, 1862, 5; 1863, 66 (Saskatchewan).—*Verr.* Pr. Ess. Inst. iii. 1862, 148.—*Verr.* Pr. Bost. Soc. ix. 1863, 234 (Maine).—*Allen,* Pr. Ess. Inst. iv. 1864, 67.—*Hoy,* Smiths. Rep. for 1864 1865, 437 (Missouri).—*Dress.* Ibis, 1865, 480 (Texas).—*McIlwr.* Pr. Ess. Inst. v. 1866, 87.—*Butch.* Pr. Phila. Acad. 1868, 149 (Texas).—*Coues,* Pr. Ess. Inst. v. 1868, 277.—*Coues,* Pr. Bost. Soc. ix. 1868, 111.—*Brown,* Ibis, 1868, 421 (Vancouver).—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19.—*? Trippe,* Pr. Ess. Inst. vi. 1871, 117.—*Coues,* Key, 1872, 120, f. 63.—*Mayn.* Pr. Bost. Soc. xiv. 1872, 370.—*Scott,* Pr. Bost. Soc. xv. 1872, 223.—*Trippe,* Pr. Bost. Soc. xv. 1873, 236 (Iowa).—*Allen,* Pr. Bost. Soc. xvii. 1874, 54 (Dakota).—*Snow,* B. Kans. 1873, 5.—*Coues,* BNW. 1874, 97.—*Gentry,* Life-Hist. 1876, 218.—*Minot,* BNE. 1877, 157.—*McCauley,* Bull. U. S. Geol. Surv. iii, n. 3, 1877, 662 (Texas).

Vicro gilvus, *Peab.* Rep. Orn. Mass. 1839, 299.—*Gregg,* Pr. Elmira Acad. 1870, —.

Vireo gilva, *Brew.* Pr. Bost. Soc. vi. 1857, 109.

Vireosylvia gilva, *Cass.* Pr. Phila. Acad. 1851, 153.—*Scl.* PZS. 1856, 298 (Mexico).—*Bd.* Rev. AB. 1866, 342, fig.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285.—*Sumich.* Mem. Bost. Soc. i. 1869, 548 (Vera Cruz).—*Ridg.* Am. Nat. vii. 1873, 198.

Vireosylvia gilvus, *B. B. & R.* NAB. i. 1874, 368, pl. 17, f. 3.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.

Muscicapa melodia, *Wils.* AO. v. 1812, 85, pl. 42, f. 2.—*Steph.* Gen. Zool. x. 1817, 382.—*Bp.* Journ. Phila. Acad. iv. 1824, 176.

Griseous Flycatcher, *Steph.* l. c.

Moucherolle gris, *V.* OAS. l. c.

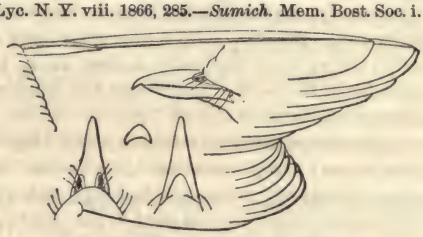

FIG. 57.—*Vireo gilvus,* natural size.

Fauvette grise des États-Unis, *V.* ll. cc. 1817 & 1823.

Vireo ou Moucherolle gris, *Le Moine,* Ois. Canad. 1861, 213.

Warbling Flycatcher, Warbling Vireo, Warbling Greenlet, *Authors.*

b. swainsoni

Vireo gilvus, *Towns* Journ. Phila. Acad. viii. 1839, 153.—*Henry,* Pr. Phila. Acad. 1855, 313; 1859, 106 (New Mexico).—*Xant.* Pr. Phila. Acad. 1859, 191 (California).—*Coop. & Suckl*

N. H. Wash. Terr. 1860, 188.—*Coop.* Am. Nat. iii. 1869, 35 (Rocky Mountains).—*Allen*, Bull. MCZ. iii. 1872, 156, 176 (Kansas, Colorado, Utah; includes both varieties).

Vireo swainsoni, *Bd.* BNA. 1858, 336 (in text).—*Coues*, Ibis, 1865, 164 (Arizona).—*Coues* Pr. Phila. Acad. 1866, 73 (Arizona).—*Coop.* Am. Nat. iii. 1869, 479.

Vireo swainsonii, *Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 714.

Vireosylvia swainsoni, *Bd.* Rev. AB. 1866, 343, fig.—*Aiken*, Pr. Bost. Soc. xv. 1872, 198 (Colorado).

Vireosylvia swainsonii, *Stev.* Ann. Rep. U. S. Geol. Surv. Terr. for 1870, 1871, 464.

Vireo gilvus *var.* **swainsoni,** *Coues*, Key, 1872, 121, f. 64.—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 712.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 12.—*Hensh.* ibid. 43, 77, 105.—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 221.

Vireo gilvus *b.* **swainsoni,** *Coues*, BNW. 1874, 98.

Vireosylvia gilva *var.* **swainsoni,** *Ridgw.* Bull. Ess. Inst. v. 1873, 181 (Colorado).

Vireosylvia gilvus *var.* **swainsoni,** *B. B. & R.* NAB. i. 1874, 371.—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 17 (Tehuantepec).

Vireosylvia gilva *β.* **swainsoni,** *Ridgw.* Rep. Surv. 40th Par. iv. pt. iii. 1877, 448.

HAB.—Of *gilvus* proper, temperate Eastern North America, to the high central plains. Breeds throughout its North American range; winters extralimital, in Mexico and doubtless elsewhere, but not known in the West Indies. Of so-called "swainsoni", the rest of the United States, in wooded regions, from the plains to the Pacific.

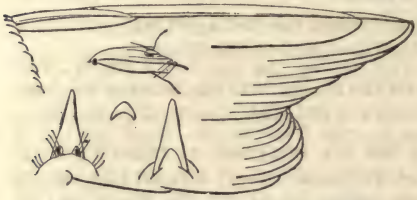

FIG. 58.—*Vireo swainsoni*, natural size.

CH. SP.—♂ ♀ *Remigibus x. Cinereo-virescens, pileo sensim cinerascente, nec fusco limbato; uropygio virente, striga superciliari albidâ, orbitis fuscis; loris albidis; infrà albidus, sordide sub flavicans, lateribus obscurioribus; alis haud fasciatis.*

♂ ♀, adult: With 10 primaries, the exposed portion of the first of which is $\frac{1}{8}$ or less of the length of the second, no obvious wing-bars, no blackish stripe along the side of the crown, and no abrupt contrast between color of back and crown. Upper parts greenish, with an ashy shade, rather brighter on the rump and edgings of the wings and tail, anteriorly shading insensibly into ashy on the crown. Ash of crown bordered immediately by a whitish superciliary and loral line; region immediately before and behind the eye dusky ash. Below, sordid white with faint yellowish (sometimes creamy or buffy) tinge, more obviously shaded along the sides with a dilution of the the color of the back. Quills and tail-feathers fuscous, with narrow external edgings as above said, and broader whitish edging of the inner webs; the wing-coverts without obvious whitish tipping. Bill dark horn-color above, paler below; feet plumbeous. Iris brown. Length, 5 inches, or rather more; extent, about $8\frac{1}{2}$; wing, $2\frac{3}{4}$; tail, $2\frac{1}{4}$; bill, $\frac{3}{8}$; tarsus, $\frac{3}{4}$.

Specimens differ a good deal in the shade of the upper parts, and particularly in the tint of the under parts. Birds of the year and autumnal specimens generally are apt to be brighter than those of spring. It is a very plainly marked species, but the above description should suffice for its discrimination among the species described in this work.

Western specimens were first doubtfully described as distinct under the name of *V. swainsoni*, then rated as a good species, and finally quoted as a

geographical race. They average rather duller colored than their Eastern representatives, like most birds, in fact, of this dry region. I fail to appreciate any tangible difference in general dimensions, or in shape of the bill. The character of more rounded wing, which has been chiefly relied upon, the 2d quill being shorter instead of longer than the 6th, does not hold as distinctive, for I find the same wing-formula in a specimen shot at Washington, D. C. Without feeling much confidence in the reality of the distinction which has been sought to be maintained, I have separated the synonymy under two heads. The description is taken from Western specimens.

WARBLING Greenlets, whether of the Eastern or of the Western type, inhabit all the woodland of temperate North America. But in choosing their summer homes they usually show good taste enough to seek the luxuries of city life, displaying at the same time the force of character required to escape its dangers. Neither disposed to undue familiarity, nor given to over-confidence, these urbane birds move in a quiet circle of their own, in slight contact with less polished members of society, quite apart from the vulgarity of the street and market-place, and always with the easy self-possession that marks the well-bred. We seldom see them, indeed; they are oftener a voice than a visible presence—just a ripple of melody threading its way through the mazes of verdure, now almost absorbed in the sighing of foliage, now flowing released on its grateful mission. Their's is a tender, gentle strain, with just a touch of sadness, borne on the same breath that wafts us the perfume of April's early blossoms; and these are all the sweeter for the instillation of such song. From the poplar that glances both silver and green as its tremulous verdure is stirred—from the grand old halls of the stately, splendid-flowered liriodendron—from the canopied shade-weaving elm, and the redolent depths of magnolia—issues all summer long the same exquisite refrain, while the singers glide through their hermitage unseen. Who would know these *spirituelle* musicians better must be quick to catch a glimpse of a very small sober-colored bird whose tints are those of its leafy home, and whose course in the heart of the trees is as devious as the play of the sunbeam itself.

The Warbling Vireo is no less agile a bird than his cousin the Red-eye, and equally tireless in the pursuit of his insect prey; both these birds sing as they go, with an unconscious air, as if in a reverie; but the easy and wonderfully skilful modulation of the former's flowing song contrasts to great advantage with the Red-eye's abrupt and somewhat jerky notes.

Both are among the most persistent of our musicians; in the Middle States, for example, their notes are heard from the latter part of April until far into September, and at all hours of the day. But much as we may admire Gilvus in the agreeable sentiment which his song inspires, we owe him a higher and more respectful consideration for the good services he renders us in a very practical way. Inhabiting by choice our parks, lawns, and orchards, and even the shade-trees of our busiest streets, rather than the untried depths of the forest, these birds collectively render efficient service by ridding us of unnumbered insects, whose presence is a pest, as well as a continual annoyance to sensitive persons. They take a foremost place among the useful birds for whose good services in this regard we have reason to be grateful, being much more beneficial than the European Sparrows, which we have imported for the same purpose, and against whose insolent aggressions these tender birds should be protected. The comparative abundance of these two species being duly considered, there can be but one opinion in the matter of their respective efficiency in destroying noxious insects; for the Vireos are particularly insectivorous birds, while Sparrows eat insects only at certain seasons, and then only through caprice; their natural food is seeds, and at present, in this country, they feed for the most part on street-garbage.*

There is nothing to distinguish the Eastern and Western Warbling Vireos, so far as their habits and manners are concerned. It is true that the former is more civilized just now; but this is a transitory circumstance, which will doubtless yield to the settlement of the West, when we may expect to find the Warbling Vireos of that portion of our country in-

* According to Mr. Gentry, who has paid such particular attention to the food of our birds, this Vireo feeds chiefly upon dipterous and lepidopterous insects, the larvæ of many of which, as is well known, are among the most injurious. This gentleman has found in their stomachs remains of *Musca domestica, Tabanus lineola, T. cinctus, Tipula ferruginea, Culex tæniorhynchus,* and other Diptera; the lepidopterous *Anisonyx vernata, A. pometaria, Zerene catenaria, Ennomos subsignaria, Eufitchia ribearia Angeronia crocataria,* and *Limacodes scopha;* with *Apis mellifica, Selandria rosæ,* and *Megachile centuncularis* among Hymenoptera; together with various Aphides, or plant-lice.

Prof. Samuel Aughey gives the Warbling Vireo among the birds of Nebraska which destroy the scourge of that country—the grasshopper. "I frequently saw it light down within a rod of me where locusts abounded and feed on them. This species seemed to eat them in all stages of their growth, and brought them constantly to their nests for their young."—(First Ann. Rep. U. S. Entom. Comm. for 1877, 1878, App. p. [27].)

crease in numbers until they are as abundant in the towns as our own variety has long since become. They are already numerous in all suitable situations, where their periods of migration and areas of distribution in the breeding season correspond perfectly with those of the typical Eastern *gilvus*. Such are my own observations as far as they go, and we have many others, unnecessary to cite, to the same effect.

Nor is there any appreciable distinction between the nests of the two varieties or between their eggs. We know how much alike the Vireos all are in these respects, and it would be surprising if there were any difference between such closely-related—in fact scarcely separable—varieties as the Warbling and Swainson's Greenlets. Audubon has left us an account of their nest-building, in which he describes with great particularity the actions of a pair whom he watched for several days whilst they were busied in the construction of their pretty pensile fabrics. The nest is hung in a forked twig, and is peculiar, in comparison with that of other Vireos, neither in this respect, nor in materials nor workmanship; but it is commonly placed higher up, sometimes fifty or a hundred feet from the ground, right under the canopy of foliage of such large trees as the elms, maples, and poplars, where it may sway in the breeze, but is secure against ordinary accidents of the weather, and remote from most enemies, the inevitable Cowbird alone excepted. Such high building, however, is not invariable, for Mr. Ridgway speaks of several nests which he took in Utah, which were built in aspens only about four feet from the ground. In form, the nest is quite deeply cupped, with a somewhat contracted brim, for the still greater safety of its precious freight, firmly secured to its slender support, and with closely matted walls. The eggs are usually four or five in number, pure white, oftenest with the reddish-brown spots or even blotches, which are the rule in this genus, but sometimes immaculate; they are nearly or quite three-fourths of an inch long, by a trifle over half an inch broad, and of the ordinary shape.

The Blue-headed Greenlet

Vireo solitarius

Muscicapa solitaria, *Wils.* "AO. ii. 1810, 43, pl. 17, f. 6".—*Steph.* Shaw's Gen. Zool. x. 1817, 349.—*Bp.* Journ. Phila. Acad. iv. 1824, 174.

Vireo solitarius, *Vieill.* "N. D. d'H. N. xi. 1817, —".—*Bp.* Journ. Phila. Acad. iv. 1824, 175.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 70.—*Aud.* OB. i. 1831, 147, pl. 28.—*Nutt.* Man. i. 1832, 305.—*Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193 ("Columbia River").—*Bp.* CGL. 1838, 26.—*Towns.* Journ. Phila. Acad. viii. 1839, 153.—*Aud.* Syn. 1839, 160.—*Aud.* BA. iv. 1842, 144, pl. 239.—*Gir.* BLI. 1844, 160.—*Gamb.* Pr. Phila. Acad. 1847, 159 (Cali-

fornia.)—*Gamb.* Journ. Phila. Acad. i. 1847, 44 (California).—*Bp.* CA. i. 1850, 330.—*Cass.* Pr. Phila. Acad. 1851, 150.—*Thomps.* Vermont, 1853, 78.—*Hoy*, Pr. Phila. Acad. 1853, 309 (Wisconsin).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 582.—*Pratten*, ibid. 603.—*Gundl.* J. f. O. 1855, 468 (Cuba).—*Scl.* PZS. 1856, 298 (Mexico).—*Brew.* Pr. Bost. Soc. vi. 1856, 6 (Massachusetts).—*Putn.* Pr. Ess. Inst. i. 1856, 213 (same).—*Bd.* BNA. 1858, 340.—*Scl.* PZS. 1859, 375 (Oaxaca); 360 (Xalapa).—*Xant.* Pr. Phila. Acad. 1859, 191 (California).—*Willis*, Smiths. Rep. for 1858, 1859, 282 (Nova Scotia).—*Coop. & Suckl.* NHWT. 1860, 189 (Washington Territory).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 365.—*S. & S.* Ibis, 1860, 31 (Coban, Vera Paz).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Barn.* Smiths. Rep. for 1860, 1861, 436 (Pennsylvania).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 410.—*Verr.* Pr. Ess. Inst. iii. 1862, 148 (Maine).—*Boardm.* Pr. Bost. Soc. ix. 1862, 126 (Maine).—*Hoy*, Smiths. Rep. for 1864, 1865, 437 (Missouri).—*Dress.* Ibis, 1865, 481 (San Antonio, Tex.).—*McIlwr.* Pr. Ess. Inst. v. 1866, 87 (Canada West).—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285 (New York).—*Brown*, Ibis, 1868, 421 (Vancouver).—*Coues*, Pr. Ess. Inst. v. 1868, 278 (New England).—*Coues.* Pr. Bost. Soc. xii. 1868, 111 (South Carolina).—*Coop.* Am. Nat. iii. 1869, 479.—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19.—*Cope*, Am. Nat. iv. 1870, 395–6.—*Trippe*, Pr. Ess. Inst. vi. 1871, 117 (Minnesota, breeding).—*Coues*, Key, 1872, 121, f. 66.—*Gundl.* J. f. O. 1872, 403 (Cuba).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 370.—*Gentry*, Pr. Phila. Acad. 1873, 354 (nest).—*Merr.* Am. Nat. viii. 1874, 7–8.—*Coop.* Am. Nat. viii. 1874, 17.—*Coues*, Am. Nat. viii. 1874, 541.—*Coues.* BNW. 1874, 99.—*Hensh.* List B. Ariz. 1875, 157 (Arizona).—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 223 (Arizona, as migrant, with both var. *cassini* and var. *plumbeus*).—*Gentry*, Life-Hist. 1876, 223.—*Minot*, BNE. 1877, 152.—*Brewst.* Ann. Lyc. N. Y. xi. 1875, 140 (Virginia).—*McCauley*, Bull. U. S. Geol. Surv. iii. n. 3, 1877, 602 (Texas).

Vireo solitiareus, *Mayn.* Pr. Bost. Soc. xiv. 1872, 370.

Vicro solitarius, *Gregg*, Pr. Elmira Acad. 1870, —.

Lanius solitarius, *Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 58.

Vireo (Lanivireo) solitarius, *Bd.* 1858.—*Gundl.* J. f. O. 1861, 324 (Cuba).—*Allen*, Pr. Ess. Inst. iv. 1864, 67.

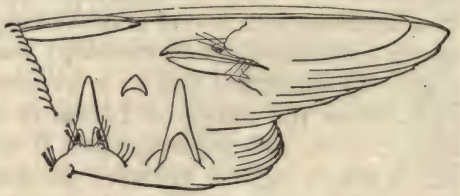

FIG. 59.—*Vireo solitarius*, natural size.

Vireo (Lanivireo) solitaria, *Ridgw.* Ann. Lyc. N. Y. x. 1874, 370 (Illinois).

Vireosylvia solitaria, *Bd.* Rev. AB. 1866, 347, fig.—*Coop.* B. Cal. i. 1870, 117.—*Sumich.* Mem. Bost. Soc. i. 1869, 548 (Vera Cruz).

Lanivireo solitarius, *Allen*, Am. Nat. iii. 1869, 507, 579.—*B. B. & R.* NAB. i. 1874, 373, pl. 17, f. 8.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 18 (Tehuantepec).—*Ridgw.* Rep. Expl. 40th Par. iv. pt. iii. 1877, 450 (Humboldt Valley).

Solitary Flycatcher, *Steph.* l. c.

Solitary *or* **Blue-headed Vireo** *or* **Greenlet,** *Authors.*

HAB.—The whole of the United States, in wooded regions, and Canada. South through Mexico to Central America. Cuba. Breeds at large ? in the United States, but chiefly north of the 40th parallel; winters extralimital, with some probable exceptions.

CH. SP.—♂ ♀ *Remigibus x. Flavo-olivaceus, vertice et lateribus capitis cæruleo-plumbeis, orbitis albis, loris fuscis; infrà albus, lateribus et axillaribus flavicantibus; alis flavidalbido limbatis necnon bifasciatis.*

♂ ♀, adult: A large and very stoutly-built species, with short, stout bill, a spurious primary one-fourth as long as the second quill, decided contrast betwixt colors of back and head, and conspicuous wing-bars. Upper parts yellowish-olive or olive-green (same shade as in *V. olivaceus*), the crown and sides of the head bluish-ashy in marked contrast, with a white line

from nostrils to and around (not behind) the eye, and dusky loral space. Below pure white, the sides strongly washed with yellowish, with some olive shading, the under wing- and tail-coverts quite yellowish. Quills and tail-feathers blackish, strongly edged with white or with the color of the back, or both, and the tips of the greater and middle coverts the same, forming two conspicuous wing-bars. Bill blackish-plumbeous, not always paler below; feet plumbeous; iris brown. Length about 5¼; extent, 8½; wing, 2⅝; tail, 2¼; bill about ⅜ long, nearly half as deep at the base.

Immature specimens are rather brighter-colored. At any season there may be rather less contrast than as above indicated between the color of the back and head, either owing to a slight ashy dorsal wash as in spring examples, or to an olivaceous shading of the head in others. But there can be no difficulty in recognizing the species by the characters above given.

THE movements of the Blue-headed Vireo are somewhat difficult to trace with entire precision, and the mode of its dispersion in this country has been much in question. The bird appears to be of rather irregular or uncertain distribution, quite common in some districts, and rare in others which seem equally suited to its requirements. Its history has never yet been fully presented, and it is only within two or three years that some important advices, before wanting, have come to hand, with respect more particularly to its occurrence in the Colorado Valley, where it was long supposed to be absent, though known to occur both in Texas and California. With the materials now at our disposition, however, the history of the species may be attempted with some confidence.

It was first described in 1810 by Wilson, who figured a specimen taken in October near Philadelphia, and saw altogether no more than three individuals, though he also inspected a drawing of one made in Georgia, where the bird was considered to be rare. He simply remarks that it is a rare species and a silent solitary bird, giving no further indication of its habits, but surmising that it may have its headquarters in some portion of the country unknown to him. Nothing whatever was added to this meagre account until Audubon in 1831 gave some further particulars, though in the mean while various compilers and "systematizers" treated of the species. The short notice in Nuttall's 'Manual' is entirely drawn from these two sources. Audubon's account, though extended and circumstantial, and including an unmistakable description of the bird, is to be taken nevertheless with some allowance for confusion of memory or other source of error. He represents the bird as an abundant inhabitant of the cane-brakes of Louisiana, in which he says it breeds. But, as both Mr. Gentry and Dr. Brewer have

observed, his account of the nest does not agree with the known facts in the case, nor has the species been since ascertained to breed in Louisiana. Such state of the case tends to throw doubt on other portions of Audubon's narrative, in which the actions of the birds are described minutely; especially as what is said might apply as well to other species as to the present. We learn, however, from Audubon, what is undoubtedly true, that he found the bird both in Texas and Nova Scotia, and that Dr. Bachman had seen it in South Carolina, where "a sweet and loud song of half a dozen notes" had been heard. The same account includes, furthermore, the statements that specimens had been procured by Townsend on the Columbia River, and a considerable notice by Nuttall of its nesting in the same region. What is now known of the distribution of the species confirms these observations, so far at least as the locality is concerned.

We were thus put in possession of an outline of the geographical distribution of the species,—Texas to Nova Scotia and Georgia to Oregon,—remaining to be filled in by subsequent observers. The earliest of these was Dr. Gambel, who, in 1847, in the papers above cited, speaks of the abundance of the birds in thickets in California during the latter part of the summer. Within a few years thereafter, the bird came to be quite generally known from various localities in the United States unnecessary to specify. In 1855, it was recorded by Gundlach from Cuba, and in the following year by Sclater from Mexico. Xantus and Heermann each shortly afterward confirmed Gambel's California record, as Cooper and Suckley did the earlier indications which Audubon had given for the extreme northwest of the United States; while, just on the heels of these important notices, came Messrs. Sclater and Salvin's announcement from Guatemala. McIlwraith in 1866 placed Canada among the localities in which the bird had been actually observed. We thus had advices from practically all of the United States, excepting only the Southern Rocky Mountain region, Valley of the Colorado, and of course the Great Plains; and from Nova Scotia, Canada, Cuba, Mexico, and Guatemala. It only remained to cover the Southern Rocky Mountain region, as was not done until the observations of Ridgway in Utah and Nevada and of Henshaw in Arizona completed the picture. These were not made until very recently; I had never seen the bird in Arizona, where it

is largely replaced by *V. plumbeus* in the breeding season, and even in 1874 I was obliged, according to the knowledge we then possessed, to except the region in question from the habitat of the bird, as was also done the same year by the authors of the "History of North American Birds". We now know, however, the exception was unnecessary, the apparent absence of the species from the Colorado Valley being occasioned by the fact that there it is rather a migrant than a breeder, and that *V. plumbeus* is conspicuous in the breeding season in this region. Mr. Henshaw's observations may be cited in support of these statements:—

"The Solitary Vireo appears to occur in the Southern Rocky Mountains only as a migrant, and to be wholly replaced there in summer by the nearly allied variety, the *Plumbeous Vireo* (var. *plumbeus*). In its course southward from its northern breeding ground, it appears to follow the mountain ranges, and to confine itself to the pine region. During the latter part of September I found the species occurring quite numerously at Mount Graham, where it was seen only among the lofty pines, usually accompanying other birds, as the Audubon's Warbler and Nuthatches. It could scarcely be said to be in song; yet, as it moved about from branch to branch, it occasionally paused to give utterance to a few strains, which, though broken and detached, were sufficient to bring to mind the beautiful melody to be heard from this bird in the vernal season—in variety and richness of notes not surpassed by the song of any of the family."

Mr. Ridgway's recent paragraph is to like effect:—"This species was met with only during its autumnal migrations, when it seemed to be not uncommon in the month of September among the cañon thickets of the western slope of the Clover Mountains. A single specimen was also shot in a buffalo-berry thicket in Buena Vista Cañon, on the eastern slope of the West Humboldt Mountains in September of the preceding year. It is still a question whether such individuals of this species were migrants from the higher portions of the mountains, or from a more northern region; but that their migration was not vertical is most probable." This seems to be a judicious query; for, though we cannot yet affirm that the Solitary Vireo actually breeds in the Colorado Valley, we may remember that the evidence against it is only negative; and I infer, from our general knowledge of the fauna of this region, that the bird will evi-

dently be found to breed in the higher portions of this watershed, where it is now only known as a migrant.

The two paragraphs just cited have already brought up the next question to be considered—the method of the bird's distribution over the area already determined to be its habitat, and the periods of its dispersal. It should be noted, in the first place, that, though we have no satisfactory evidence of the bird's wintering anywhere in the United States, and though we know it well as a winter bird of Mexico and Guatemala, it still seems probable that some individuals may linger along our southern border during the season in question. In fact, this is virtually attested by Bachman's early notice of the species in South Carolina in February, if there be no mistake about this; and Gambel has something to the same effect for Southern California. But there is no doubt whatever that the great body of the birds pass beyond our limits in the fall. The movement begins at the north in September, and by the end of the following month the birds are already, as a rule, beyond our confines. The return commences at the very opening of spring, and by the middle of April these Vireos have already become generally dispersed, though the limits of the migration, as in Maine, Canada, Wisconsin, and the Columbia River region, are not attained until the first or second week in May. Thus, at Washington, D. C., where this Vireo is the rarest of its kind, Dr. Prentiss and myself noted its arrival on the 25th of April, and its departure October 20th. The Rev. Dr. Turnbull's note for East Pennsylvania and New Jersey is substantially the same. In the vicinity of Philadelphia, says Gentry, it usually arrives about the 15th of April, sometimes not till the beginning of May, and retires during the latter part of September or early in October. In Connecticut, where, according to Merriam, it is not uncommon during the migrations, and where a few breed, the same authority fixes the time of its advent as the first week in May; but he adds, that it has been seen in the fall as late as the 13th of October. Various New England writers agree upon the first or second week in May as the time of appearance of the bird in their midst. McIlwraith's date for Hamilton, Canada West, is May 10th. The records from the Western States are less explicit, but agree as far as they go; and the same may be said of the still fewer data we have received from the Rocky Mountain region and the Pacific coast.

Notwithstanding the regularity we may thus trace in the movements of the Blue-head, the bird is by no means equably distributed all over the great area it occupies; and the cause of its rarity in some localities, no less than of its comparative abundance in others, remains unexplained. On the whole, the birds appear to pursue more especially two lines of migration on opposite sides of the continent, where their numbers are greater than they have ever been shown to be in the interior, as the Mississippi watershed at large. This is the reverse of the case which the Philadelphia Vireo offers; it may be due, in a measure, to the birds' inclination to follow along mountain ranges rather than pass across stretches of low alluvium. As already observed, it is only in the further half of the United States that the Solitary Vireo ordinarily stops to breed. The records we possess are unanimous in this regard, and it would seem to be a very just statement of Dr. Brewer's that "both at the East and the West it is undoubtedly only migratory to about the 40th parallel, and does not, except in mountainous localities, breed south of that line."

Passing over several early accounts of its nidification, as not entirely free from suspicion—though it should be immediately conceded that we have no obvious occasion to challenge Nuttall's Columbia River account—we find it first stated by Baird, in 1844, that the bird breeds near Carlisle in Pennsylvania. The breeding-habits, so long in question, have been studied more attentively by Mr. Gentry than by any one else, for all that appears, as may be inferred from the *résumé* of his observations, which I take pleasure in laying before the reader.

The Blue-headed Vireo (says Mr. Gentry) delights to build on the borders of dense forests, and along unfrequented roads, its favorite trees being the red cedar and red maple—the former by the roadside, the latter on the edges of the woods. Both sexes reach thir breeding grounds together, though the more retiring and quieter females are not so often observed as their mates. The birds appear to have lately become more abundant, with the modification of the face of the country, and were one season nearly as numerous as the Red-eye. They began to build in a week or two after their arrival, about the time when the pin-oaks shed their catkins, which are largely, sometimes exclusively, used in the construction of the nest. In other cases, the nests are built chiefly of grasses. They are grace-

fully fixed in a forked twig, presenting a neat and cozy appearance, and symmetrically cup-shaped, though the exterior may bristle with the projecting tassels of the pin-oak. The female adjusts the materials which the male brings, and the structure is completed in about three days. The eggs are laid one a day, and incubation, which devolves solely upon the female, continues for 10 or 11 days, during which time the brooding bird is supplied with nourishment by her dutiful mate. The female is so unsuspicious, and so lacking in timidity, that persons may pass and repass within ten feet of the nest without exciting her distrust or causing alarm. Should her confidence, however, prove misplaced, and her home seem in danger of violation, she glides silently away, leaving to her valiant mate the effort to resent the threatened intrusion and deter assault—to whose credit be it said, that he defends his home at the hazard of his life. Both parents attend to the young, and are kept busy enough in providing sufficient food. They seek and bring to the nest the larvæ of the various geometrid moths which infest our trees; different kinds of flies and gnats, among them species of *Cynips*, or gall-flies, as well as a few beetles—a sufficiently varied bill of fare, and one which attests the benefit which these birds unconsciously confer upon us whilst they care for their offspring. Only one brood is reared each season; the young are able to provide for themselves when they are about 10 or 12 days old; the female has then again to look after herself, and the male becomes a selfish gourmand. Though insects still form much of their fare, they now feed with gusto on the berries of the *Cornus* and *Viburnum*, and reassert the quiet and retiring disposition which the exigencies of the breeding season temporarily hold in abeyance.

Observing that in places frequented by this Vireo he had often seen masses of pin-oak catkins which closely resembled the nests themselves, Mr. Gentry questions whether some principle of "protective mimicry" (as it is called by a certain school) may not underlie the use of these substances as materials for the nests. "The utilization of such substances in the manner of nests, from their fancied resemblance to loose clusters of catkins, are best adapted to the security and well-being of the species, and now constitute in certain localities the typical structure."

Other and quite different styles of architecture are however

described by Dr. Brewer, whose excellent opportunities for examination of these structures have been fully utilized in his contribution to the history of the species. I extract his interesting account in full:—

"Seven nests of this species, found in Lynn and Hingham, Mass., exhibit peculiarities of structure substantially identical. In comparison with the nests of other Vireos, they are all loosely constructed, and seem to be not so securely fastened to the twigs from which they are suspended. One of these nests, typical of the general character, obtained in Lynn, May 27, 1859, by Mr. George O. Welch, was suspended from the branches of a young oak, about twelve feet from the ground. The external depth of this nest was only two and a half inches, the diameter three and a quarter, and its cavity one and three quarters deep, and two inches wide at the rim. It was constructed externally of strips of yellow and of gray birch-bark, intermingled with bits of wood and dry grasses. The external portion was quite loosely put together, but was lined, in a more compact manner, with dry leaves of the white pine, arranged in layers. Another nest, found in Hingham, was but two feet from the ground, on a branch of a hickory sapling. In its general structure it was the same, only differing in shape, being made to conform to its position, and being twice as long as it was broad. It contained four young, when found, about the 10th of June. One nest alone, built in a bush in Lynn, exhibits an average degree of compactness in its external structure. This is largely composed of cocoons, which are woven together into a somewhat homogeneous and cloth-like substance. Within, decayed stems of grasses take the place of the usual pine-needles. In the summer of 1870 a pair built their nest in a dwarf pear-tree, within a few rods of my house. They were at first very shy and would not permit themselves to be seen at their work, and suspended all labor when any one was occupied near their chosen tree. Soon after the construction of the nest two Cowbird's eggs were deposited, which I removed, although the female only laid two of her own before she began to sit upon them. By this time she became more familiar, and would not leave her nest unless I attempted to lay hands upon her. She made no complaint in the manner of the White-eyed, nor sought to attack like the Yellow-throated, but kept within a few feet, and watched me with eager eyes, until I left her.

Unfortunately, her nest was pillaged by a Black-billed Cuckoo, and I was unable to observe her feed her young, as I had hoped to do."

The eggs are four or five in number, in no respect remarkable on comparison with those of other large Vireos, being of the usual shape, with a pure white ground-color, to which the contents lend a slight blush when the egg is fresh, and speckled with reddish, sometimes over the whole surface, but oftener chiefly about the larger end; they measure about three-fourths of an inch in length by one-half of an inch in breadth—rather over than under those dimensions.

It has never happened to me to hear the nuptial song of the Blue-headed Vireo, to which Mr. Burroughs accords such high and feeling praise. Dr. Brewer regards it as bearing no resemblance to that of any other Greenlet. "It is a prolonged and very peculiar ditty, repeated at frequent intervals and always identical. It begins with a lively and pleasant warble, of a gradually ascending scale, which at a certain pitch suddenly breaks down into a falsetto note. The song then rises again in a single high note, and ceases. For several summers the same bird has been heard, near my house in Hingham, in a wild pasture, near the edge of a wood, always singing the same refrain, during the month of June."

Cassin's Greenlet

Vireo solitarius cassini

Vireo cassinii, *Xant.* Pr. Phila. Acad. 1858, 117; 1859, 191 (Fort Tejon, Cal.).—*Bd.* BNA. 1858, 340; ed. of 1860, pl. 78, f. 1.—*Bd.* Rev. AB. 1866, 347 (in text).—*Ridgw.* Rep. Expl. 40th Par. iv. pt. iii. 1877, 449.

Lanivireo solitarius *var.* **cassini,** *B. B. & R.* NAB. i. 1874, 376.

Vireo solitarius *var.* **cassini,** *Hensh.* Rep. Orn. Specs. 1874, 105 (Arizona).—*? Hensh.* List B. Ariz. 1875, 115.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 223 (Arizona).

In addition to typical *solitarius,* or what has not been in any way distinguished from it, the Coloradan region furnishes a somewhat peculiar, though very closely allied, form,—the *Vireo cassini* of Xantus. This has latterly been taken for the most part as a mere plumage of *V. solitarius,* and it is not yet certain that it is anything more. Though quoted by Professor Baird and myself as a simple synonym, it has been more recently distinguished varietally by Mr. Ridgway, and some facts which he gives of its association with *V. solitarius* seem to bear him out in this course. I deem it proper to call attention to the matter, reserving an opinion until more material shall have been examined. The points about the bird are its much duller and more brownish olivaceous, with little contrast between the head and back, impurity of the white loral line and orbital ring, together with a general buffy or ochraceous tinge of the under parts, where *solitarius* is pure white.

I HAVE never recognized this supposed species as different from *solitarius*, and have nothing to contribute to its meagre history. Birds doubtfully supposed by Mr. Henshaw to belong here fell under his observation in Arizona, apparently only during the migration. "In 1873, it was observed both by Dr. C. G. Newberry and myself; the earliest date being September 12. It was not uncommon along the Gila River, where it usually kept in the tall cottonwoods. In 1874, it was again met with by Dr. Rothrock and myself at Mount Graham, and under precisely the same circumstances as the preceding species [*V. solitarius*]. They were, however, here quite rare as compared with *solitarius;* but, near Camp Crittenden, the last few days of August, quite a number were seen among the deciduous trees. Their seeming preference for the deciduous trees over the coniferous timber is the only point wherein their habits seem to differ from those of the Solitary Vireo." Mr. Ridgway has a note to the effect that this bird, which he characterizes as "rare and little known", was observed by him only in the cañons of the West Humboldt Mountains, where it was not uncommon in September, having probably migrated thither from some region lying northwestward.

The Plumbeous Greenlet

Vireo plumbeus

Vireo most like **solitarius,** *Coues,* Ibis, 1865, 164 (Fort Whipple, Ariz.).

Vireo plumbeus, *Coues,* Pr. Phila. Acad. 1866, 74 (Arizona).—*Coop.* Am. Nat. iii. 1869, 479.—*Allen,* Am. Nat. vi. 1872, 345.—*Coues,* Key, 1872, 351.—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873, 714.

Vireosylvia plumbea, *Bd.* Rev. AB. 1866, 349, fig.—*Aiken,* Pr. Bost. Soc. xv. 1872, 198 (Colorado).

Lanivireo plumbeus, *Ridgw.* Rep. Expl. 40th Par. iv. pt. iii. 1877, 451 (Rocky Mountains).

Vireo solitarius *var.* **plumbeus,** *Allen,* Bull. MCZ. iii. 1872, 176.—*Coues,* BNW. 1874, 100.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 12.—*Hensh.* ibid. 1874, 43, 77, 105 (Arizona, &c.).—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 224.

FIG. 60.—*Vireo plumbeus,* natural size.

Lanivireo solitaria *var.* **plumbea,** *Ridgw.* Bull. Ess. Inst. v. 1873, 181 (Colorado).

Lanivireo solitarius *var.* **plumbeus,** *B. B. & R.* NAB. i. 1874, 37, 377, pl. 17, f. 10.

Plumbeous Vireo, *Coues,* ll. cc.

Lead-colored Vireo, *B. B. & R.* l. c.

Western Solitary Vireo, *Hensh.* l. c.

HAB.—Southern Rocky Mountain region of the United States, and southward into Mexico.

CH. SP.—♂ ♀ *Plumbeus, infrà albus, lateribus virenti-plumbeo lavatis; alis caudâque fuscis, albo limbatis, illis necnon albo bifasciatis; loris fuscis; orbitis albis.*

♂ ♀, adult: With the form of *V. solitarius;* rather larger, and nearly all of the olivaceous of that species replaced by plumbeous. Entire upper parts, including crown and sides of neck and head, uniform plumbeous or bluish-ash, gaining a faint olive shade on the rump. Below pure white, with a slight ashy-olive shade on the side. Lores dusky. A white line from nostrils to and around the eye. Two cross-bars on the wings, and edges of most of the quills pure white. Tail similarly edged with white. Bill blackish-plumbeous, very robust; feet plumbeous. Length, 5¾–6⅛; extent, 9¾–10¼; wing, 2 9/10–3 1/10; tail, 2½; bill, ½; tarsus, ⅝; middle toe and claw, the same; spurious quill exposed ¾ of an inch, or about a third of the length of the second quill.

In freshly moulted specimens, the pure white edgings of the wings and tail are very broad and conspicuous, as are also the markings on the sides of the head. In some cases, the upper parts are more tinged with olive than as above described, showing an approach to *solitarius*, up to which the species grades very closely. In discussing its relationships with that form, the larger size of *V. plumbeus* should be taken into consideration, as well as the fact that typical *solitarius*, showing no approach to *plumbeus*, is found in the same region.

IN the mountainous parts of Arizona, where this bird was discovered, it is an abundant inhabitant of the pine-belt during the summer, apparently replacing the Solitary Vireo at that period of the year. I observed its arrival at Fort Whipple about the middle of April, and found it at frequent intervals until October, when it disappeared from that elevated locality. During the breeding season it is the characteristic species of its family in the higher and northerly portions of the Territory, as the Least Vireo is at the same season in lower portions of the Colorado and Gila Valleys. These early observations respecting the bird have been followed up by other naturalists, through whose exertions we have become better acquainted with this interesting species. It has been traced northward to Laramie Peak by Dr. R. B. Hitz, and south to the plains of Colima by Xantus. Mr. C. E. Aiken has found it in Colorado and New Mexico, while both Ridgway and Henshaw have met with it in Utah. Its range is thus clearly seen to include the whole of the Middle Province, or Southern Rocky Mountain region, where it is for the most part isolated from its relatives during the breeding season, though associated with various birds of its own kind, especially the Solitary and the Least Vireos, during its migrations. Its habits have not yet been very attentively

studied, but, as far as known, they do not differ from those of the Blue-headed Greenlet. The nest and eggs, taken by Aiken in Colorado, are described by Henshaw as substantially identical with those of *solitarius* taken in New England. The nest was composed of soft cottony substances, bound exteriorly with strips of bark and other fibrous material, and lined with fine dried grasses, and the eggs were white, spotted, chiefly at the larger end, with reddish-brown.

A pair of these birds which I shot at Fort Whipple offered one of the many touching spectacles it has been my fortune to witness, in evidence of the devotion birds so often show to their mates. The female, fatally wounded by my shot, crouched upon a slender twig, where she balanced with the greatest difficulty, breathing heavily in dire distress; and I could plainly perceive a fold of intestines protruding from a rent in the abdomen. Her mate in a few moments came flying to her assistance. He alighted by her side, caressed her tenderly with his beak, and seemed to beseech her, in low, sympathetic accents, to fly the fatal spot. She gathered herself for the effort, but only fluttered fainting to the ground, where she lay extended in the agonies of death, with her bowels trailing in the dust; but her brave mate, heedless of my presence, never left her side, nor ceased his fond attentions, till he shared her fate. Let us imagine them still together beyond the dark portals! Such things are sad enough, and seem almost shameful, to look back upon: it is the blot on a bright shield to remember, that quite like tragedies are of incessant recurrence, and inseparable from the practical pursuit of ornithology. Let us take what comfort we may in the reflection that such acts of violence, committed by men, are in the strict and evident order of Nature, who has ordained that animals shall torture, murder, and devour each other forever.

The Gray Greenlet

Vireo vicinior

Vireo vicinior, *Coues*, Pr. Phila. Acad. 1866, 75 (descr. orig. Fort Whipple, Ariz.).—*Bd.* Rev. AB. 1866, 361, fig.—*Coop.* Am. Nat. iii. 1869, 479.—*Elliot*, "Illust. BNA. pl. 7".—*Coop.* B. Cal. i. 1870, 125.—*Coues*, Key, 1872, 122.—*B. B. & R.* NAB. i. 1874, 393, pl. 17, f. 7.—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 227 (habits).—*Steph.* Bull. Nutt. Club, iii. n. 1, Jan. 1878, 42 (California).*—*Stev.* Bull. Nutt. Club, iii. n. 2, April, 1878, 93 (Gila River).

Gray Vireo, *Coues*, l. c.

Arizona Vireo, *B. B. & R.* l. c.; *Hensh.* l. c.

HAB.—Arizona and New Mexico.

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* Special paper:—

1878. STEPHENS, F. Vireo vicinior in California. < *Bull. Nutt. Ornith. Club*, iii. n. 1, Jan. 1878, p. 42.

CH. SP.— ♂ ♀ *Remigibus x, 1mo 2di dimidiato, digitis brevissimis, alis caudâque æqualibus. Cinereo-plumbeus, uropygio vix olivascente; infrà albus, lateribus vix flavicantibus; loris orbitisque albidis.*

♂ ♀: Wing much rounded, and no longer than the tail; spurious quill half as long as the second, which is about equal to the eighth or ninth; fourth, fifth, and sixth longest; third little shorter. Tail as long as the wings, rounded, the feathers with very obtuse ends. Bill very short, robust. Toes remarkably short, the middle, including its claw, much less than the tarsus, and the tip of the inner claw falling short of the base of the middle one. Entire upper parts dull grayish-ash, gaining a slight olivaceous tinge on the rump. Below pure white, with the faintest possible yellowish wash on the sides. Wings and tail grayish-fuscous, very slightly, if at all, bordered with whitish. A whitish orbital ring and slight loral stripe; no dusky on the lores; no decided markings on the head. Bill and feet plumbeous; iris brown. Length, 5¼; extent, 8⅝; wing and tail, each, 2½; exposed portion of spurious quill, ¼; of second quill, 1½; bill, ⅜; tarsus, ⅝; middle toe and claw, ½; inner toe and claw, ⅜; outer toe and claw, ⅜.

Young: A specimen just from the nest is brownish-gray above, white below, without a trace of olivaceous or yellowish on the body; the quills and tail-feathers have yellowish-olive edgings, rather stronger than in the adult, and there is a slight whitish bar across the ends of the greater coverts.

The bird bears a superficial resemblance to a small faded specimen of *V. plumbeus*, but is quite different, and belongs to typical *Vireo* (as restricted to exclude *Vireosylvia* and *Lanivireo*) in the neighborhood of such species as *noveboracensis*, *belli*, &c. It will easily be recognized by the above characters. For convenience of comparison, the characters are here contrasted with those of *V. plumbeus*:—

V. plumbeus.—Wing, 3; tail, 2½; spurious quill a third the length of the second one, which is intermediate between fifth and sixth. Tail about even; the feathers obliquely truncate. Tarsus equalling the middle toe and claw (⅝). Wing-coverts, quills, and tail-feathers broadly edged with pure white. Sides of head with strong markings, the lores definitely dusky, interrupting the ring round eye.

V. vicinior.—Wing and tail, each, 2¼. Spurious quill one-half the second one, which is intermediate between eighth and ninth. Tail rounded, the feathers with rounded ends. Tarsus longer than middle toe and claw (⅝–½). Wing-coverts, quills, and tail-feathers scarcely edged with dull white. Sides of head plain; no dusky on lores; white orbital ring uninterrupted.

THE type-specimen of *Vireo vicinior*, which I shot at Fort Whipple on the 24th of May, 1865, remained unique for nearly ten years, and nothing more was learned of the bird until Mr. Henshaw gave us the welcome contribution to its history which I take pleasure in transferring to my page:—

"This Vireo was discovered by Dr. Coues at Prescott, Ariz., and described in 1866, since which time the type of the species

has remained unique till the rediscovery of the species during the past season in New Mexico and Arizona. Judging from the wide separation of the localities at which the six specimens were taken, it appears to be a widely distributed species, though everywhere rare. It would appear not to be a bird of the mountains, but, in respect to elevation, to occupy a position somewhat intermediate between the higher districts and the low valleys. The rocky hills, covered with a scanty growth of bushes and scrub, are its favorite haunts, and it was in such localities that all our specimens were obtained. They are not specially active in their motions, but glean their insect food from among the branches with the same deliberation of movement and ease that mark the habits of the vireos generally; but in their choice of hunting ground they are rather peculiar. They do not, like the Solitary Vireo and its allies, frequent the tops of the larger trees, nor, like the White-eyed and Bell's Vireo, keep close to the ground, but move about constantly in the tops of the bushes from six to twelve feet in height. On the Colorado Chiquito River, in New Mexico, July 8, I found a family of these birds, the young, though fledged, being still dependent on the old for food. Upon approaching the bush in which they were lodged, the parents manifested the utmost solicitude, and flew to meet me, uttering a variety of notes, now flying to the edge of the thicket, and remonstrating with me with harsh cries of anger and alarm, now returning to their young, and with earnest warning notes endeavoring to lead them away from a spot which to them seemed fraught with danger. My suspicions that they were not the Plumbeous Vireos had at first been aroused by hearing the song, which seemed to me one of the most beautiful I had ever heard from any of the family. It might perhaps be best compared with the finest efforts of the Solitary Vireo, yet to the beauty and variety of notes of that bird it had added all the charm and mellowness of expression which is pre-eminent in the song of the Yellow-throated Vireo. During the few moments I spent in observing their actions, the female led away two of the brood, leaving the male with two of the nestlings, which I secured. Fall specimens differ from the type which is in summer dress only in having the lower dorsal surface, rump, upper tail-coverts, and outer webs of the inner secondaries, except the exterior pair, washed faintly with green, which is also just perceptible on the sides and flanks. The young in the first plumage do not differ materially from the adult."

The White-eyed Greenlet

Vireo noveboracensis

Muscicapa noveboracensis, *Gm.* SN. i. 1788, 947, n. 81 (Green Flycatcher of Penn. AZ. 389, n. 274).—*Lath.* IO. ii. 1790, 489, n. 92.—*Turt.* SN. i. 1806, 582.—*Steph.* Gen. Zool. x. 1817, 366.

Muscicapa novae-Boracensis, *Less.* Man. i. 1828, 153.

Vireo noveboracensis, *Bp.* Journ. Phila. Acad. iv. 1824, 176.—*Bp.* Ann. Lyc. N. Y. ii. 1826, 70.—*Aud.* OB. i. 1831, 328, pl. 63.—*Nutt.* Man. i. 1832, 306.—*Bp.* CGL. 1838, 26.—*??? Towns.* Journ. Phila. Acad. viii. 1839, 153 ("Columbia River"; not since verified).—*Aud.* Syn. 1839, 161.—*Aud.* BA. iv. 1842, 146, pl. 240 (Nova Scotia; not since verified).—*Gir.* BLI. 1844, 158.—*Bp.* CA. i. 1850, 330 (in part; includes Antillean species).—*Cass.* Pr. Phila. Acad. 1851, 150.—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Thomps.* N. H. Vermont, 1853, 77.—*Hoy,* Pr. Phila. Acad. 1853, 309 (Wisconsin).—*Read,* Pr. Phila. Acad. 1853, 398 (Ohio).—*Gerhardt,* Naum. iii. 1853, 37.—*Gundl.* J. f. O. 1855, 469 (Cuba).—*Pratten,* Tr. Illinois Agric. Soc. i. 1855, 603.—*Putn.* Pr. Ess. Inst. i. 1856, 213.—*Scl.* PZS. 1857, 204 (Xalapa); 228 (Santecomapam).—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Maxim.* J. f. O. 1858, 187.—*Bd.* BNA. 1858, 328.—*Jones,* "Nat. in Bermuda, 1859, 71" (resident).—*Martins,* J. f. O. 1859, 212 (Bermuda).—*Bland,* Smiths. Rep. for 1858, 1859, 287 (Bermudas).—*S. & S.* Ibis, 1860, 274 (Coban, Vera Paz).—*Brew.* Pr. Bost. Soc. vii. 1860, 307 (Cuba).—*Gundl.* J. f. O. 1861, 404 (Cuba).—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 365.—*Barn.* Smiths. Rep. for 1860, 1861, 436.—*Verr.* Pr. Ess. Inst. iii. 1862, 157.—*Allen,* Pr. Ess. Inst. iv. 1864, 83.—*Dress.* Ibis, 1865, 481 (San Antonio, Tex.).—*Bd.* Rev. AB. 1866, 354, fig.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285 (New York).—*Coues,* Pr. Bost. Soc. xii. 1868, 111 (South Carolina).—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19.—*Parker,* Am. Nat. v. 1871, 168.—*Allen,* Bull. MCZ. ii. 1871, 270 (Florida, winter).—*Coues,* Am. Nat. v. 1871, 197 (Kansas).—*Coues,* Key, 1872, 122, f. 68.—*Allen,* Am. Nat. vi. 1872, 359.—*Scott,* Pr. Bost. Soc. xv. 1872, 223.—*Gundl.* J. f. O. 1872, 404 (Cuba).—*Ridgw.* Am. Nat. vii. 1873, 199.—*Merr.* Am. Nat. viii. 1874, 7, 8.—*Coues,* BNW. 1874, 100.—*B. B. & R.* NAB. i. 1874, 385, pl. 17, f. 11.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 17 (Tehuantepec).—*Gentry,* Life-Hist. 1876, 229.—*Minot,* BNE. 1877, 160.

Vireo noveberacensis, *Peab.* Rep. Orn. Mass. 1839, 298.

Vireo novoboracensis, *Cabot,* Naum. ii. Heft iii. 1852, 66 (Lake Superior).

Vireo noveboracencis, *Woodh.* Rep. Zuñi & Colo. R. 1853, 75.

Vireo novæboracensis, *Coues,* Am. Nat. ii. 1868, 576 (Texas and Indian Territory).—*Allen,* Am. Nat. iii. 1869, 507, 579.—*Coues,* Pr. Phila. Acad. 1871, 21 (Fort Macon, N. C.)—*Trippe,* Pr. Ess. Inst. vi. 1871, 117.

Viero novaboracensis, *Gregg,* Pr. Elmira Acad. 1870.

Lanius novebracensis, *Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 58.

Vireo (Lanivireo) noveboracensis, *Bd.* 1858.—*Gundl.* J. f. O. 1861, 324 (Cuba).

Muscicapa cantatrix, *Bartr.* Trav. Fla. 1791, 290 *bis.*

Vireo cantatrix, *Wils.* AO. ii. 1810, 266, pl. 18, f. 6.—*Bp.* Journ. Phila. Acad. iv. 1824, 175.—*Haym.* Pr. Phila. Acad. 1856, 290.

Vireo musicus, *V.* OAS. i. 1807, 83, pl. 52.

Green Flycatcher, *Penn.* AZ. ii. 1785, 389, n. 274.

Hanging Flycatcher, *Lath.* "Syn. Suppl. 174".—*Steph.* Gen. Zool. x. 1817, 366.

Little Domestic Flycatcher, *or* **Green Wren,** *Bartr.* l. c.

White-eyed Vireo, *or* **Greenlet,** *of Authors.*

FIG. 61.—*Vireo noveboracensis,* natural size.

HAB.—Eastern United States, excepting perhaps parts of New England; west regularly to Dakota, Iowa, Kansas, Indian Territory, and Western Texas, occasionally to eastern bases of the Rocky Mountains. Minnesota (*Trippe*). "Nova Scotia" and ? "Columbia River" (*Audubon*). Breeds in its United States range at large. Winters from South Carolina, Georgia, Florida, and the Gulf States south to Guatemala. Bermudas, common, resident. Cuba, rare.

SP. CH.— ♀ ♂ *Olivaceo-virens, infrà albidus lateribus et pectore flavicantibus; fronte orbitisque flavis, loris fuscis; alis fuscis, flavidalbido limbatis et bifasciatis; caudâ fuscâ, virenti-olivaceo limbatâ, rostro pedibusque plumbeis, iridibus albis. Long. tot.* 5; *alar. exp.* 8; *alæ* 2⅛–2½.

♂ ♀, adult: A small, stoutly-built species, notable for the brightness of the olive parts, and the richness of the yellow about the forehead and eyes and along the sides; furthermore, *the iris is white.* Length, 4¾–5; extent, 7¾–8¼; wing, 2⅛–2½; spurious primary exposed about ¾ of an inch, and about half as long as the 2d primary; 4th and 5th quills longest; 3d and 6th little shorter; 2d about equal to 8th; tail, 2⅛–2¼; tarsus, ¾; middle toe and claw, ½; bill, along culmen, ½ or less. Upper parts bright olive-green, including the crown, which, if anything, is more yellowish still; usually a slight ashy shade on the hind neck; forehead and orbital region bright yellow; a dusky loral line; under parts white, but brightly tinted on the sides, axillars, crissum, and sometimes quite across the breast, with yellow. Wings and tail dusky, the feathers of the latter edged with the color of the back, the wing-coverts crossed with two broad and conspicuous white or whitish bars, and the quills edged with the same, especially the three innermost secondaries, on which the edging is very broad. Bill and feet blackish-plumbeous; the cutting edges of the mandibles, at least in dried skins, pale horn-color. Iris white.

The sexes are indistinguishable in size or color, and the young are quite similar. A newly-fledged bird which I shot August 11, 1859, is slightly smaller than an adult, but not otherwise sufficiently different to require separate notice.

NOW leaving the ornamental park, the mantling woodland of deciduous trees, and the perpetual robe of green that the mountains wear, and losing as we go the band of Greenlet musicians that sing in these shades, let us push into more lowly places—for we have not done with the Vireos yet. Indeed, the species of this group might be classed according to their life's station, almost as well as by those technicalities which the ornithologist discovers in beak and wing. One set of Greenlets are large and emulous birds—the Red-eye, the Yellow-throat, the Solitary, Plumbeous, and Warbling Vireos—living in woodland high above the level of the ground; and these we have already seen in their native haunts. With the White-eyed

Vireo we enter upon a group of smaller species, whose surroundings we shall find to be quite different; for these live in the thickets, down among the Cat-birds, Thrashers, Sparrows, Chats, and Wrens. This group of nearly-related, bush-loving species includes the Black-capped, the Least, and Bell's Vireos, besides the more familiar White-eye, whose turn comes first.

This neat and pleasing little bird does not belong at all to the fauna of the Colorado Valley, but I make a place for it here, because it reaches to the very feet of the majestic mountains that environ this watershed on the east. It is one of the most abundant and most generally diffused of its family in the United States east of the Rocky Mountains, and is among the various species whose range has been latterly traced westward to these mountains. There is indeed a Townsendian record of the occurrence of the White-eye in the Columbia River region, but this lacks verification, and is presumed to be erroneous. The same may be said respecting Audubon's ascription of the species to Nova Scotia, though this is much more likely to be confirmed. The New England writers are nearly unanimous in deciding that the bird does not proceed through their territory beyond Massachusetts, and it has already become rare in some parts of that State. We may therefore accept this as the usual terminus of the migration in that direction; and it agrees somewhat, as a matter of latitude, with what we know of the extension of the bird in corresponding latitudes further west, though the bird is cited by Trippe from Minnesota, and by Cabot from the Lake Superior region.* The western line of distribution passes through Dakota, Iowa, Kansas, Colorado, the Indian Territory, and Texas,—even western portions of the latter. The bird is resident in the Bermudas, and we have sundry advices of its occurrence in Cuba, but in no other of the West Indies, if the Jamaican representative, *Vireo modestus*, be regarded as a distinct species. The breeding-range is coextensive with the whole United States distribution of the bird, and also includes Bermuda. The species, moreover, differs from some of its allies in wintering among us, as it does in numbers in the South Atlantic and Gulf States, from South Carolina to Texas; though some individuals perform a much more extensive migration, making Southern Mexico and Guatemala their winter residence.

* Whence it appears that Dr. Brewer's statement, that the bird has not been found "north of the 42d parallel", is incorrect. Mr. Trippe worked in the region of the Mille Lacs, which lie between 46° and 47°.

This was one of the earliest known species of the genus, having been described as the "Green Flycatcher" by Pennant, and the "Hanging Flycatcher" by Latham, upon which Gmelin based his *Muscicapa noveboracensis*. Almost immediately afterward it was renamed by Bartram as *Muscicapa cantatrix*—a term borrowed by Wilson, and which is commonly, though wrongly, attributed to the latter writer. Wilson was familiar with the bird, and with him appears to have originated the name now current of "White-eyed", in allusion to the peculiar color of the iris, by which single feature the species is distinguished from any other treated in the present work. Wilson also calls it the "Politician" by way of nickname, from the fact that it is fond of newspapers—scraps of which are usually found among the mass of odd materials that compose the nest. Audubon adds that shreds of papery wasps' nests are also used; and Brewer enumerates "fragments of dry leaves, bits of decayed wood and bark, coarse blades of grass, various vegetable fibres, lichens, fragments of insects, mosses, straws, stems, &c." Of whatever materials it may be constructed, the nest is always built after the usual Vireonine style of architecture, being a closely-matted cup swung pensile from a forked twig, nearly hemispherical in contour, and rather large in proportion to the size of the bird, as seems to be the rule with nests that are built on or even near the ground, in comparison with those placed at great elevations. Various authors have noted, since Wilson, that this nest is one of the regular receptacles of Cowbirds' eggs, and that the White-eye makes a faithful foster-parent of the obnoxious parasite. The Vireo's own eggs are not to be distinguished with certainty from those of other species of this genus, being, like them, pure white, speckled chiefly about the larger end with dark dots of purplish and reddish-brown. Though the bird is less in linear dimensions than most of its relatives of the *Vireosylvia* group, it is rather portly in shape, and its eggs consequently do not yield in size to those of some of the larger species, being rather over three-fourths of an inch in length, by nearly or quite three-fifths in breadth; the usual number is five. In places where the White-eyes are numerous, as they are, for example, about Washington, these nests are among those we may most frequently brush against in threading our way through the thickets, and they are usually placed so low that one may look into them when standing on the ground. The tangled ravines along the course

of Rock Creek, near the city just named, marking where numberless rivulets make into the main brook, are favorite resorts, where the nests will be found in a bunch of sweet-brier, or on the wreathy stem of a blackberry-bush, or, perhaps still oftener, at the very terminal fork of a slender, swaying branch of the sapling, whose lower limbs reach into some shady nook just over the bed of the rivulet—in any event, in a thicket, where the Catbirds, Thrashers, Chats, Cardinal Grosbeaks, Maryland Yellow-throats, and Carolina Wrens are all each others' neighbors. The White-eye's liking for low watery places is still further witnessed by its frequent resort to the swamps that border the Potomac, in the same locality, where it nests about the very edges of the reedy tracts, and even in their midst, on the various little knolls that rise somewhat above the water-level. In August and September, when one goes shooting Reedbirds, Blackbirds, and Sora Rails, in the marshes that lie about Arlington, and along the course of the Eastern Branch, he is pretty sure to be scolded for his pains by one after another of these petulant little birds, which still linger in such places as I have described, in company with buffy-colored young Maryland Yellow-throats, and numberless reed-ragged Marsh Wrens.

The White-eyed Vireo has always been notable, even in groups of birds whose spirit is high, for its irritable temperament; and during the breeding season, nothing can surpass the petulance and irascibility which it displays when its home is too nearly approached, and the fuss it makes when its temper is ruffled in this way. It skips about in a panicky state, as regardless of exposure as a virago haranguing the crowd on a street corner, seemingly at such loss for adequate expletives that we may fancy it quite ready to say "Thank you", if somebody would only swear a little. Like the Wrens and Titmice—like various birds, in fact, which live habitually in shrubbery, where they have to peer and pry about to see well—these Vireos show a good deal of curiosity and inquisitiveness when anything is going on that they do not quite understand; and if we take care not to frighten them into a flutter of excitement, they frequently come almost within arms' reach by slow and devious approaches, poising curiously on one twig after another, and soliloquizing the while in their quaint fashion. Their uneasiness, however, is chiefly exhibited during the breeding season, and all their vehemence is but the excess of their concern for their little families, which, as they seem to be aware,

are peculiarly exposed to danger in their lowly homes; their ardor exhausts itself when the occasion is past, and what had been excessive solicitude gives way to the simple sprightliness and vivacity, which then appears as an agreeable trait. In the springtime they rival their relatives in brilliancy and versatility of song, which must be heard to be appreciated; it is a curious medley, delivered with great earnestness and almost endless variations, scarcely to be described in words, though several authors have made the attempt—with what success the reader who has listened to the performance may judge for himself on referring to the pages of Nuttall or of Mr. Gentry.

I have only to add to this sketch of a bird I learned as a boy to know pleasantly, that it is in no wise behind its relatives of the same genus in doing service by destroying noxious insects. Dr. Brewer says that it feeds eagerly upon the destructive canker-worm, and is doubtless of considerable service in restricting the increase of this scourge in some portions of the country. Prof. Aughey has it down in the long list of birds that feed in Nebraska on the still more destructive locusts, stating that he watched them with a field-glass, and saw them tear a large 'hopper in pieces to give to their young ones. Mr. Gentry observes that the nestlings are fed with the larvæ of *Phalænidæ*, as well as with diptera, spiders, aphides, and ants, and that the birds devour immense numbers of coleopterous, hymenopterous, lepidopterous, and dipterous insects—his formal list of which is sufficiently extensive to prove that we owe to this sprightly tenant of the shrubbery a debt of gratitude that should privilege the bird to scold us, on occasion, as much as it pleases.

Hutton's Greenlet

Vireo huttoni

Vireo huttoni, *Cass.* Pr. Phila. Acad. 1851, 150, pl. 10, f. 1 (Monterey, Cal.).—*Bd.* Great Salt Lake, 1852, 328.—*Bd.* BNA. 1858, 339; ed. of 1860, pl. 58, f. 2.—*Scl.* PZS. 1858, 302 (Oaxaca).—*Scl.* PZS. 1862, 19 (La Parada, Southern Mexico).—*Bd.* Rev. AB. 1866, 357, fig.—*Coop.* B. Cal. i. 1870, 121.—*Coop.* Am. Nat. viii. 1874, 17.—*Salv.* Ibis, 1874, 99 (Guatemala).—*B. B. & R.* NAB. i, 1874, 387, pl. 17, f. 12.

Vireo huttonii, *Coues,* Key, 1872, 123, f. 69.

Hutton's Vireo, *Cass.* l. c., *and Authors.*

FIG. 62.—*Vireo huttoni,* natural size.

HAB.—Mexico, where resident; north to Fort Tejon, California (*Xantus*); to lat. 38° (*Cooper*); south to Guatemala (*Salvin*).

♂ ♀: First quill rather less than half the second, which about equals the tenth; third a little longer than seventh; fourth and fifth nearly equal and longest. Tail slightly rounded, shorter than the wings. Bill very small. Above olive-green; brightest behind, especially on rump and edging of tail; duller and more ashy toward and on top and sides of head and neck. Wings with two bands on coverts, and outer edges of innermost secondaries rather broadly olivaceous-white; other quills edged externally with olive-green, paler toward outer primary, internally with whitish. Lateral tail-feathers edged externally with yellowish-white. Feathers of rump with much concealed yellowish-gray. Under parts pale olivaceous-yellowish, purest behind, lightest on throat and abdomen; the breast more olivaceous, the sides still deeper olive-green, the breast soiled with a slight buffy tinge. Axillars and crissum yellowish, the inside of wings whitish. Loral region and narrow space around eye dull yellowish, in faint contrast to the olive of head. Bill horn-color above, paler below; legs dusky. Total length, 4.70; wing, 2.40; tail, 2.05. (Description copied from *Baird*, Rev. AB. 1866, p. 357.)

HUTTON'S Vireo is one of the three species which Mr. Cassin added to the genus in 1851, and a very near relative of *V. noveboracensis* and *V. modestus*. It was originally described from Monterey, and has since been found to extend on the one hand into certain portions of California, and on the other to Guatemala. It is also cited from various localities in Mexico, where it is stated to reside, according to Sumichrast, in the Alpine region of Orizaba. I have never seen it alive, and have no information to offer respecting its habits. A memorandum of Mr. Xantus's is quoted by Dr. Brewer, to the effect that a nest containing incubated eggs was found early in May at Fort Tejon suspended from three high weed-stems, a foot from the ground. Dr. J. G. Cooper has found this bird wintering in California up to 38°, and supposed it to go further north in summer, as he observed but few on the Coast Range in May. One that was shot by him at San Diego on the 9th of May contained an egg ready to be laid. His observations, as far as they go, indicate a bird whose habits, as might be expected, are much the same as those of the White-eyed Vireo.

Bell's Greenlet

Vireo belli

Vireo bellii, *Aud.* BA. vii. 1844, 333, pl. 485.—*Cass.* Pr. Phila. Acad. 1851, 150.—*Woodh.* Rep. Zuñi & Col. R. 1853, 76.—*Hoy,* Smiths. Rep. for 1864, 1865, 437 (Missouri).—*Bd.* Rev. AB. 1866, 358, fig.—*Coues,* Key, 1872, 123, f. 70.—*Allen,* Bull. MCZ. iii. 1872, 176.—*Ridgw.* Am. Nat. vi. 1872, 430; 1873, 199 (Illinois).—*Trippe,* Pr. Bost. Soc. xv. 1873, 236 (Iowa).—*Coues,* BNW. 1874, 101.—*Ridgw.* Ann. Lyc. N. Y. x. 1874, 370 (Illinois).

Vireo belli, *Bp.* CA. i. 1850, 330.—*Bd.* Rep. Great Salt Lake, 1852, 328.—*Bd.* BNA. 1858, 337. —*Coues*, Ibis, 1865, 158 (Kansas).—*Dress.* Ibis, 1865, 481 (San Antonio, Tex.).—*Butch.* Pr. Phila. Acad. 1868, 149 (Texas).—*Coues*, Am. Nat. vi. 1871, 197.—*Allen*, Am. Nat. vii. 1873, 363.—*Trippe*, Am. Nat. vii. 1873, 498.—*B. B. & R.* NAB. i. 1874, 389, pl. 17, f. 13.—*Ames*, Bull. Minnesota Acad. 1874, 57 (perhaps).—*Hensh.* Rep. Orn. Specs. 1874, 105 (Gila River).—*Hensh.* List B. Ariz. 1875, 157 (Arizona, together with *pusillus*).—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 225.—*Nels.* Bull. Nutt. Club, i. 1876, 42 (Illinois, abundant).—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 18 (Tehuantepec).

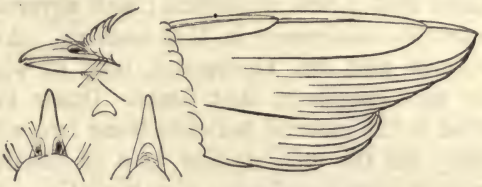

FIG. 63.—*Vireo belli*, natural size.

Bell's Vireo *or* **Greenlet,** *Aud.* l. c., and *Authors.*

HAB.—Western portions of the United States, and Mexico. East to Illinois (*Ridgway, Nelson*); Dakota (*Audubon*); Kansas and Nebraska (*Coues, Goss*); Iowa (*Trippe*); Missouri (*Hoy*); ? Minnesota (*Ames*); Texas (*Dresser, Butcher, Heermann*); Arizona (*Henshaw*); California (*Cooper*); Tehuantepec (*Sumichrast*).

CH. SP.— ♂ ♀ *Remigibus x. Flavo-olivaceus vertice aliquantulum obscuriore, infrà flavicans, gula albida; loris fuscis, orbitis albis, alis flavo-albido limbatis et fasciatis, caudâ longioribus.*

♂ ♀: A very small species, quite a miniature of *V. gilvus*, the markings of the head in particular being much the same; but readily distinguished by its smaller size, decidedly yellowish under parts, well-marked wing-bar, and different wing-formula. Above yellowish-olive or olive-green (much as in *olivaceus*), darker and ashier on the head, but without abrupt contrast, brightest on the rump. Below decidedly yellowish, olive-shaded on the sides, whitening on the throat and belly. A white line from nostril to and around the eye, but scarcely or not prolonged behind as in *gilvus;* lores dusky. Wings and tail dusky, with considerable edging of the color of the back, or whitish; the wings with two whitish cross-bars, that on the end of the greater coverts stronger than the other. Length, under 5 inches; wing, 2⅓; tail, less; tarsus, ⅔.

BELL'S Greenlet is one of the several species which Audubon discovered on his excursion to the Upper Missouri, and published in the Appendix to the last volume of the octavo reprint of his splendid work, with Harris's Finch, LeConte's, Baird's, Smith's, and Shattuck's Buntings, Brewer's Blackbird, Ayres's Woodpecker, Nuttall's Woodpecker, Sprague's Lark, and other species, dedicated by the amiable naturalist to his friends, some of whom were his companions on that memorable journey. He found it as far up the river as the mouth of the Yellowstone, and noted that its resorts were the shrubbery of the bottom-lands, as those of

the White-eyed Vireo would be under the same circumstances. A few years later, Dr. Woodhouse found it in Texas, where he states that it was abundant; and several observers afterward noted its occurrence in that country. Among them were Mr. Dresser and Dr. Heermann, both of whom ascertained that the bird breeds in that State. Other naturalists meanwhile filled in the interval between these two widely separated localities; but the still broader area of distribution of the species was not determined until very recently. Among the most interesting observations in this regard should be mentioned those by Mr. Ridgway and Mr. Nelson in Illinois, Dr. Cooper in California, and especially by Mr. Henshaw in Arizona.

"The Vireo Bellii," says Mr. Ridgway, in the first of the places above cited in the American Naturalist, "was found to be a common, or at least not rare, species in the thickets on the prairies. It was first seen on the 8th of June, when specimens were shot, and being then in full song, there can be little doubt that the species breeds there."

His later note in the same periodical gives further particulars:—

". . . During a lull in the chorus we heard, from the depths of the thicket, a very curious gabbling, or sputtering song, which was entirely new to us. We hastened to the thicket, and, entering it as far as possible, lay in wait for the strange songster to resume his vocal performance. In a few moments a little grayish bird carefully approached, flitting cautiously from twig to twig, now and then halting, and, after uttering the peculiar notes which had attracted our attention, would stretch out his neck and eye us with great curiosity and evident suspicion. After observing him carefully to our satisfaction at a distance of hardly a rod, we found that he was Bell's Greenlet (*Vireo Bellii*), a species of the plain east of the Rocky Mountains from Texas northward, and not before detected east of the Mississippi river. After we had become satisfied of his identity we shot him; but upon attempting to secure our prize, we found the briary undergrowth too intricate and powerful to allow a passage through it. In nearly all the thickets others of the same species were frequently heard, so that it appeared to be common in that locality. The little White-eyed Greenlet (*V. noveboracensis*) was also common in the same thickets, and was easily distinguished by his well-known notes, an attempted translation of which gives it the local name of 'chickty-beaver bird.'"

Referring also to Illinois, Mr. E. W. Nelson states that Bell's Greenlets were abundant in August, 1875, in the shrubbery of Fox Prairie, Richland County:—"They were exceedingly shy, and although several could be heard uttering their curious song and the same tune, and repeated efforts were made to secure them, only two specimens were obtained." Mr. Nelson subsequently saw a specimen which had been taken near Chicago in June of the same year, and considers that they will eventually be found throughout the State. The bird is one of several Western species which, belonging to prairie land, extend their range to Illinois, where the surface-conditions are essentially the same as those of the western sides of the Mississippi Basin. Among others may be mentioned the Western Meadow Lark, LeConte's Bunting, Cassin's Finch, and the Painted Lark-bunting.

Whilst journeying across the Plains in 1864, *en route* to Arizona, I was detained for some days in the vicinity of Fort Riley, Kansas, by an "Indian scare" from the front, and employed the time very profitably in observing and collecting birds along the Republican Fork of the Kansas River. The season—late in May—was propitious, and the place proved to be a famous one for birds, which thronged the river-botton. Bell's Vireos were then in full song and feather, and no one could enter the shrubbery without being oddly saluted by these inquisitive little busy-bodies, who seemed to have pre-empted the whole water-front of the country, and were quite ready to insist upon their squatter sovereignty. I found no nests, however, probably because there were none yet built, and was obliged to content myself with watching the curious ways of the birds, and skinning a few for the further purposes of science. For all that I saw of their habits, they might as well have been White-eyes; but their notes are different.

In 1861, we had advices from Dr. Cooper of the presence of Bell's Vireo in the Colorado Valley, where he stated that it occurred at Fort Mojave. But when shortly afterward the nearly related *V. pusillus* came to be described, it was presumed that the latter had been mistaken for *V. belli*. The reference to the supposed *belli* from California was therefore turned over to *pusillus* in my original notice of the latter, and it was entirely ignored by Cooper himself in his recent "Ornithology of California". This left us without satisfactory evidence of the presence of Bell's Vireo west of the Rocky Mountains. A *habitat* so

restricted as to exclude the Cooper record was given by Baird, Brewer, and Ridgway in 1874, and at the same time I stated in the "Birds of the Northwest" that this species had not been observed in the Southern Rocky Mountain Region, "where replaced by *V. pusillus*". It seems, however, that we were all wrong about this, the fact being that *V. belli* does inhabit *Arizona*, whether the birds observed by Cooper were of this species or the other. Such is shown to be the case by Mr. Henshaw in the following paragraph:—

"This little Vireo appeared to be rather common along the Gila River, inhabiting the dense thickets along the banks. At this season, the middle of September, its quaint song was heard during most of the day, but more particularly in the hot hours of noonday. In addition to the song, which somewhat resembles the White-eyed Vireo's, it has a harsh scolding note, which it often repeats as it searches among the dense undergrowth for its food. But a single specimen was obtained, as it was rather timid, and on hearing the slighest noise would instantly cease its notes and dive into the brush. The single specimen secured appears on comparison to be quite typical of the species . . ."

It seems most probable, from the date at which these observations were made, and the glimpse given of the manners of the birds, that they were migrating at the time, and it may be that Bell's Vireo comes into the Colorado Valley in the fall, like the true Solitary Vireo, these two species being there represented in the breeding season by *V. pusillus* and *V. plumbeus* respectively. This much, at least, may be fairly surmised from what little we have learned of the movements of Bell's Vireo. We know that it breeds from our southern border in Texas to its limits of distribution northward, and that it occurs in Mexico as far south as Tehuantepec, where Sumichrast found it; but the periods of its migrations and the full extent of its winter residence still remain to be ascertained.

The nest and eggs of Bell's Greenlet I have not taken occasion to examine for myself, as they have been carefully described by Dr. Brewer. A nest from Neosho Falls., Kans., found in June by Mr. B. F. Goss, is pensile, as usual, and suspended by three-fourths of its brim from two small twigs. "Over these is strongly bound a finely felted webbing of the flax-like fibres of plants, interwoven with slender stems. With these are connected and interwoven also the materials that make up the

periphery of the nest itself. This is composed of long and slender strips of bark, fragments of dry leaves, bits of wood, and various other fragmentary substances. The nest, unlike others of this family, is lined with down, and the fine long hair of some animals, instead of with vegetable stems. The diameter as well as the height of this nest is about two and a half inches." Another nest, however, also described by Dr. Brewer, was lined as usual with grasses and fine plant-stems; and this one was of a different shape, being nearly twice as wide as deep, and with a contracted brim, the opening being only half as much as the outside diameter. The eggs, as described by the same eminent oologist, are from 0.73 to 0.76 in length by 0.52 to 0.56 in breadth, pure white in color, sparsely dotted with red around the larger end.

The Least Greenlet

Vireo pusillus

Vireo bellii, *? Coop.* Pr. Cal. Acad. 1861, 122 (Fort Mojave, Ariz.).

Vireo pusillus, *Coues,* Pr. Phila. Acad. 1866, 76 (descr. orig.; near Fort Whipple, Ariz.).—*Bd.* Rev. AB. 1866, 360, fig.—*Coues,* Pr. Phila. Acad. 1868, 83 (Arizona).—*Coop.* Am. Nat. iii. 1869, 186, 479.—*Coop.* B. Cal. i. 1870, 124.—*Elliot,* "Illust. BNA. pl. 7".—*Coues,* Key, 1872, 123, f. 71.—*Coop.* Am. Nat. viii. 1874, 17.—*B. B. & R.* NAB. i. 1874, 391, pl. 17, f. 14.—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 226.—*Ridgw.* Rep. Expl. 40th Par. iv. pt. iii. 1877, 451 (Sacramento, Cal.).—*Stevens,* Bull. Nutt. Club, iii. n. 2, apr. 1878, 93 (Gila River).

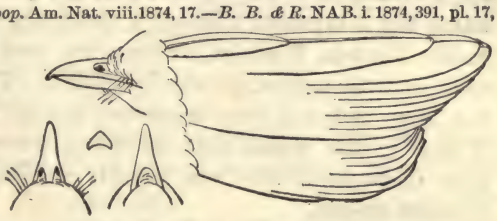

FIG. 64.—*Vireo pusillus,* natural size.

Least Vireo, *Coues,* l. c., *and Authors.*

HAB.—Arizona, chiefly in its lower portions, and California from Sacramento to Cape St. Lucas. (Doubtless also portions of Mexico.)

CH. SP.—♂ ♀ *Remigibus x,* 1mo 2di *dimidiato; minimus; alis caudâque æqualibus; cinereo-plumbeus, vix olivaceus, infrà albus, lateribus vix flavicantibus.*

♂ ♀: A very small species, quite like a miniature of *V. vicinior* in the dull coloration and relative lengths of wings and tail; more nearly related to *V. belli,* but differing in coloration, wing-formula, and relative lengths of wing and tail. Above grayish-ash with slight olive shade; below, including under wing-coverts, white, slightly obscured on the breast, with faint yellowish wash on the sides. A whitish line from nostrils over and around eye; lores slightly darkened; two wing-bands—one stronger than the other—and narrow edgings of wings and tail, dull white, sometimes faintly yellowish.

Exposed portion of spurious quill half as long as the second quill; fourth primary longest; third and fifth subequal; second about equal to eighth. Tail very long, equalling the wings, with narrow acuminate feathers; tarsus decidedly longer than the middle toe and claw. Length, about 5 inches (rather less); extent, 7¼; wing, 2⅛; tail, about the same; bill, ½; tarsus, ⅝; middle toe and claw, ½.

In its general pale dull coloration, with little trace of olive or yellowish shades, this species is curiously similar to *V. vicinior*, and it shares with that species the equality in the length of the wings and tail. The distinctions, however, are too evident to require detailed comparison. From the much brighter-colored *V. belli*, of about the same size and its nearest United States relative, it may be distinguished by the following comparative diagnoses:—

V. belli.—Spurious primary ⅔ the second one; third longest; second rather longer than seventh. Wing decidedly longer than tail. Olive-green above, and strongly yellowish below.

V. pusillus.—Spurious primary ½ the second one; fourth longest; second equal to eighth. Gray, with a slight olive tinge; only a trace of yellowish below.

I WELL remember when a copy of "Audubon" first opened up to me what seemed like a revelation—with what intensity I set myself to master the wonderful history—and the boyish despair I felt when I came to the Vireos! The very name was a mystery without a meaning, with a foreign sound, unlike Thrush, Warbler, or Sparrow, and there was such a lot of these little myths, all alike greenish! I should have scouted the idea, had any one presented it, that there were any more Vireos in the world than Audubon knew; and that I should ever discover a new one myself would have seemed like a feverish dream.

The type-specimen of *Vireo pusillus* was shot on Date Creek, in Arizona, June 6, 1865, but under circumstances that left me no opportunity of observing it at my leisure; and I never saw it again during my residence in the Territory. We were travelling hastily and uncomfortably on one of the raids upon Apaches that we occasionally made from headquarters at Fort Whipple, when the loud and melodious song of a Vireo attracted my attention, and I lost no time in securing the interesting bird. It was a female, who doubtless had her eggs or young near by, though the occasion was not one of the most propitious for birds'-nesting. The same species had been previously taken by Dr. Cooper at San Diego, and still earlier by Mr. Xantus at Cape St. Lucas, but it remained undescribed until the following year, when I overhauled my Arizona collections at the Smithsonian in Washington.

Mr. Ridgway has since found the Least Vireo to be abundant in the vicinity of Sacramento, where he discovered a nest; and several other observers, notably Mr. Henshaw, have met with it in various portions of Arizona. It does not appear to reach the more elevated parts of that Territory, in the pine-belt of which *Vireo vicinior* is found and *V. plumbeus* is abundant. Its habits, as far as known, correspond closely with those of Bell's and the White-eyed Vireo; and Dr. Brewer describes two nests from Arizona as substantially like those of the former species. Each contained three eggs, and in one of them there was also a Cowbird egg, supposed, from its small size, to have been laid by *Molothrus obscurus*. The Vireo's eggs measured 0.69 by 0.56, and were of crystalline whiteness, speckled with red and reddish-brown—the markings being very minute and scarcely discernible in some cases, in others larger and more distinct.

Black-capped Greenlet

Vireo atricapillus

Vireo atricapilla, *Woodh.* Pr. Phila. Acad. Apr. 1852, 60 (Rio San Pedro, Texas).—*Bd.* Rep. Great Salt Lake, 1852, 328.—*Woodh.* Rep. Zuñi & Colo. R. 1853, 75, pl. 1.

Vireo atricapillus, *Cass.* Illust. B. Cal. & Tex. 1854, 153, pl. 24.—*Bd.* BNA. 1858, 337.—*Bd.* U. S. & Mex. B. Surv. ii. pt. ii. 1859; Birds, p. 12 (Devil's River, Texas).—*Bd.* Rev. AB. 1866, 353, fig.—*Coop.* B. Cal. i. 1870, 121.—*Coues,* Key, 1872, 124.—*B. B. & R.* NAB. i. 1874, 383, pl. 17, f. 6 (Mazatlan).

Black-headed *or* **Black-capped Vireo,** *Authors.*

Hab.—Texas to Mazatlan.

Ch. sp.—*Remigibus x. ♂ olivaceus infrà albus lateribus virentibus, alis albido bifasciatis, rostro pileo genisque nigris, loris orbitisque albis. ♀ ♀ pileo schistaceo.*

♂: Top and side of the head black, excepting a white eye-ring and white loral stripe. Upper parts olivaceous; lower parts white, tinged with pale greenish on the sides and flanks. Wings and tail blackish, edged with olivaceous, the former with two dingy whitish bars across the ends of the greater and median coverts; lining of wings yellowish. Bill black; feet dark; iris red. Length, 4¾; extent, 7¼; wing, 2¼; tail, nearly 2; bill, ½; tarsus, ¾; middle toe and claw, ½; first primary exposed for ⅜ of an inch.

A specimen from Mazatlan, supposed to be a female, is described by Baird and Ridgway as having the black of the head replaced by dark slate color, the upper parts duller olive, the lower somewhat buffy. The black cap of the male renders the species conspicuous among all its congeners.

NO more than four specimens of this very rare Vireo are known to naturalists. Dr. S. W. Woodhouse, the discoverer of the species, procured two males in Western Texas, near the head of the Rio San Pedro, on the 26th of May, 1851.

The following year it was described by him in the Philadelphia Academy's "Proceedings", and an indifferent figure was given soon after in Captain Sitgreaves's Report. In 1854, Mr. Cassin published a handsome colored plate, of life size, taken from one of the original specimens. About the same time, and in the same locality, Mr. J. H. Clark, one of the naturalists of the Mexican Boundary Commission, procured another specimen, which was described by Baird in 1858. Our knowledge rested entirely upon these data, supplemented by the brief field-notes which each of the naturalists mentioned communicated to Mr. Cassin, until Col. A. J. Grayson secured at Mazatlan a fourth specimen, probably a female, which Baird and Ridgway noted in the "History of North American Birds". This example is interesting, not only as indicating probably some sexual differences in this species, but also as extending the known habitat, hitherto represented by a single locality in Southwestern Texas. We may safely infer that the rare and curious bird will yet be found at intermediate points in New Mexico and Arizona; meanwhile, we await with interest further contributions to its life-history.

CHAPTER XVII.—SHRIKES

Fam. LANIIDÆ

THE present chapter concludes a series of families by some called Dentirostres, from the circumstance that the bill as a rule presents a more or less obvious nick in the cutting edge of the upper mandible near the end, and sometimes quite a "tooth" is developed just back of the nick. Such structure is particularly well marked in the Vireos, which appear to be closely related to the Shrikes, and it may be seen in most of the Turdine, Sylvicoline, and other birds we have already considered. In the Shrikes, which we now come to examine, this character is found in its highest development; the *Laniidæ* being characterized by the notched, toothed, and hooked bill, the size, shape, and strength of which make it quite like that of a bird of prey, in combination with small, weak, and thoroughly Passerine feet. Nevertheless, the family is quite a large one, consisting of numerous genera and some two hundred nominal species, which differ so much in details of structure that strict definition of the family is scarcely practicable. I find no satisfactory diagnosis of the group in its entirety, nor am I prepared to furnish one; and authors disagree very cordially respecting the natural limitation of the family. It was formerly held to be much more extensive than it is now usually admitted to be, having included the *Thamnophilinæ*, *Vireonidæ*, and some other groups which have since been elsewhere assigned or allowed to stand by themselves. The *Laniidæ* of Gray consist of three subfamilies, the *Pachycephalinæ*, *Laniinæ*, and *Malaconotinæ*, the second of which may be regarded as the central or typical group. The family is thoroughly Old World, only two species of a single genus occurring in America.

Subfamiy LANIINÆ: Typical Shrikes

This group is perfectly illustrated by its typical genus *Lanius*, the only one with which we have here to do.

Genus LANIUS (Linnæus)

Falco sp., *Linn.* Syst. Nat. 1735.
Ampelis sp., *Linn.* Syst. Nat. 1748.
Collyrio, *Mœhring,* Gen. Av. 1752, 28 (not available).– *Gray,* G. of B.—*Bd.* BNA. 1858, 323.
Lanius p., *Linn.* Syst. Nat. 1758.
Lanius p., *Briss.* Orn. ii. 1760, 140.
Lanius p., *Linn.* Syst. Nat. 1766.
Lanius of most *Authors.*
Collurio, *Vigors,* PZS. 1831, 42.—*Bd.* Rev. AB. 1866, 437. (Not of Kaup, 1829.)

Chars.—Wing of ten primaries, and tail of twelve rectrices, both rounded in shape, and of nearly equal lengths. Point of the wing formed by the 3d, 4th, and 5th quills, the 2d not longer than the 6th, and the 1st about half as long as the 3d. Tarsus equalling or slightly exceeding in length the middle toe and claw, strongly scutellate in front, and with the outer lateral plate usually more or less subdivided, as is unusual among Oscines. Lateral toes of about equal lengths, their claws reaching to the base of the middle claw; inner toe cleft nearly to the base, the outer more extensively coherent with the basal joint of the middle toe. Feet large and strong, but without specially "raptorial" development either of the digits or of their claws. Bill large and powerful, compressed, deep, completely notched and toothed, and strongly hooked, presenting the full accomplishment of a raptorial character. Rictus ample and deeply cleft, and strongly bristled; gonys short, only about half the length of the lower mandible. Nostrils circular or nearly so, placed well forward in the nasal fossa, more or less perfectly overhung and concealed by tufts of antrorse bristly feathers.

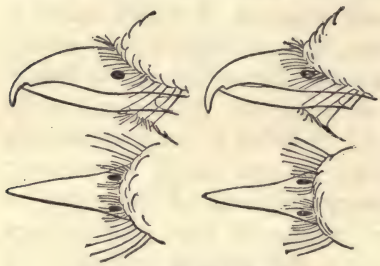

Fig. 65.—Bills of Shrikes.

Body stout; neck short; head relatively large. Coloration simple, the black, white, and bluish or grayish tints being unrelieved by red or other bright color.

Of the genus as restricted to include only the species that conform to the foregoing diagnosis, there are about nine well-determined species, inhabiting Europe, Asia, Africa, and North America.

§ 1.—*On the Use and Meaning of Shrikes' Names*

It is a very nice question, What is the proper name of this genus under the current rules of nomenclature? The answer depends upon two important points, neither of which has been definitely determined. One of these points is, the date to which we may be permitted to go back to find a tenable generic name; the other is, by what method we may discover the type of a Linnæan genus when, as in the present case, it covers more than one Linnæan species. The present instance may be made to furnish an important precedent, as it certainly answers all the requirements of a test case.

George Robert Gray, who paid great attention to loosing synonymatic knots according to certain consistent, if not the most judicious, rules, adopts the name *Collyrio*, Mœhring, 1752, and his example was followed by Baird in 1858. He goes back for genera to 1735, the date of the first edition of the Systema Naturæ, taking any applicable name he finds, of date 1735 or later. As Linnæus named no genus of Shrikes until the 10th edition of his System, 1758, Mœhring's term *Collyrio*, 1752, clearly has priority.

The exceptions which most ornithologists, myself among the number, would take to this course, are several. In the first place, we are not to go back of the date of establishment of the binomial nomenclature for any names, whether generic or specific. Though the Linnæan rules were first definitely promulgated in the Philosophia Botanica, published in 1751, the first instance of the consistent use of the *nomen triviale*, or the second term of the binomial nomenclature, is in the Linnæan Species Plantarum, 1753, which the botanists generally concur in adopting as their starting-point; but the binomial nomenclature was not consistently applied by Linnæus to zoology until the 10th edition of the Systema Naturæ, 1758. G. R. Gray himself does not go behind this edition for his *specific* names; and most ornithologists are unwilling to go back of the 12th edition, 1766, for any names whatever, with one special exception, in favor of Brisson's *genera*. It is urgently required

for the stability of scientific nomenclature to have *some* fixed starting-point, *what* one being a matter of less consequence. It is also highly desirable that the initial point should be the same for both generic and specific terms. In the case of the latter, the ornithologist cannot go back of 1758, which I strongly recommend to be taken as our starting-point, there being various sound reasons why it is more eligible than 1766. Ornithologists, and, in fact, naturalists at large, are about equally divided on this special point; the present tendency in this country is to "take Linnæus at 1758", and this is the course I adopt in my own writings. Mœhring's genera are of course thrown out by this limitation of time.

Supposing, however, that for *generic* names we may revert to 1751 or even to 1735, either of which dates leaves Mœhring in, the question arises whether an author who does not conform to the requirements of a system of nomenclature shall be allowed to impose names to the prejudice of the names of others who do conform to such system. With a saving clause for the genera, but not the species, of Brisson (1760), ornithologists are nearly unanimous that those who are not binomenclators have no rights we are bound to respect in nomenclature. By those who hold to this ruling, Mœhring is to be thrown out of court on this count also, as he did not deal at all with specific names.

Discarding *Collyrio* of Mœhring, therefore, as untenable upon one or both of the foregoing considerations, we take up the next name in order, which is *Lanius* L., 1758. Admitting the name as of this date, the question arises, For which one of the modern genera of Shrikes must *Lanius* be retained? It cannot, of course, be abolished, nor is it yet available in its original acceptation, for Linnæus made it cover not only all the Shrikes he knew, but also the several other birds of different families which he wrongly considered to be Shrikes; it must, therefore, be used in a new and much restricted sense for some one of the several valid genera of the family—for which one, however, cannot be easily decided. Linnæus specified no type, and he, moreover, made his generic characters comprehensive enough to more than apply to the whole family. Failing any criterion in this and other Linnæan cases, by which the author's meaning can be ascertained with the precision requisite for the purposes of modern classification, or the applicability of his generic name be narrowed to the required limits, we are driven to an entirely arbitrary course. This is, to elect

some one species as type of the genus, affix the original name to this, and then apply other names to the other generic groups at our discretion; such being practically the universal custom.

Gray's rule appears to be, to select as the type the *first* species given under the head of the genus; and accordingly he considers *L. cristatus* (which is an Indian species) as the type of the genus *Lanius* Linn., 1758. The rule works well enough in some cases, but obviously cannot be rigidly enforced. Dire confusion would follow the attempt to carry it out to its full consequences. Scores, if not hundreds, of cases might be cited, in which such a course is clearly impracticable.

It is impracticable, for instance, in this very case of *Lanius*, for in 1766, in the 12th edition, the first species given under *Lanius* is *L. forficatus;* whence it is clear that Linnæus had no particular type in view.

Recognizing such points, naturalists agree that a writer who subdivides a typeless genus may restrict the original name to any section he chooses, and rename the rest, and that his action in these premises shall be in effect the same as if he himself had first proposed the name.

The genus *Lanius* continued for some years to be used in substantially its Linnæan acceptation; but presently various species of Linnæan *Lanius* were made the types of successive new genera. Though the authors proposing these new names did not formally subdivide the genus, we may concede that their action was tantamount to this. In 1817, the *Lanius forficatus* of Linnæus, 1766, became the type of *Edolius* of Cuvier; in 1826, the *Lanius collurio* of Linnæus was made by Boie the type of his genus *Enneoctonus;* in 1829, Kaup used *Collurio* for what Boie had called *Enneoctonus*, and also proposed *Phoneus* for another closely related section; in 1831, Vigors used *Collurio* for the group of which *L. excubitor* Linn. is the type. Not to go further into the record, it may be said, in fine, that every name which authors have imposed upon species of the Linnæan *Lanius* has been based upon some other section of the genius than that of which *L. excubitor* is typical, down to *Collurio* Vigors, 1831, which latter is antedated by *Collurio* Kaup, 1829. Whence it appears that if *Lanius* is not tenable for *L. excubitor*, it is not tenable at all. Yet it cannot be abolished entirely.

It is with no little satisfaction that I find myself able to restore the name *Lanius* to the present genus, upon principles

of nomenclature which are recognized by the great majority of naturalists. I submit the following *résumé* of the argument:—

1. *Collyrio* Mœhring, 1752, is not available, being given by a non-binomialist prior to the establishment of the binomial nomenclature.

2. *Lanius* Linnæus, 1758 and 1766, has no specified type; no type can be inferred except by the arbitrary method of considering the first species given by Linnæus as typical; such assumed type is different in 1758 and in 1766; in subdividing the genus, an author is free to make any one of the Linnæan species of *Lanius* the type of a new genus.

3. All the genera which have in fact been proposed for species which were included by Linnæus in *Lanius* are based upon other species than *L. excubitor* and its allies, excepting *Collurio* Vig., 1831, which is antedated by *Collurio* Kaup, 1829, the latter being based upon a species of a different genus, to wit, *Enneoctonus* Boie, 1826.

4. *Lanius* therefore, in a restricted sense, becomes tenable for the genus of which *excubitor* is typical, upon that exclusion of the several heterogeneous elements which authors have successively effected, and it is untenable for any other genus, all the rest having been provided with other names.

From such considerations of the technical aspects of the case which affect our nomenclature, the transition is easy and natural to the signification of these names, and their original application to the birds of the present genus.

Κολλυρίων is used by Aristotle as the name of a bird, of what kind, however, cannot be determined. Sundevall does not identify the name, and the lexicons, some of which do not give it at all, merely define it as the name of some bird—"*avis quædam incerta*". Nor do I know the etymology of the word; none of the authorities consulted give any derivation; it has no obvious connection with the Greek *κολλύριον*, which was a kind of medicament, either an eye-salve or a suppository, according to different definitions, and which in the Latin shape of *collyrium* is now a common medical term for an eye-wash. From *κολλυρίων* comes the familiar term *Collyrio* or *Collurio*, used both in a generic and a specific sense in modern ornithology.

Gesner indeed treats "de Collvrione", but only briefly, and evidently without any clear idea of what Aristotle meant by the

term. He rather makes it out to be a kind of Thrush, and cites the opinion of William Turner, to the effect that it was the bird called by the English the Fieldfare. He treats of the European Shrikes in another part of his work, under a name of his own.

The name "Lanius", which means a butcher or executioner, was excellently well chosen by Gesner to designate these sanguinary birds, which had at that early day already made their reputation for rapacity. That this was the first use of the term in such connection, for birds which Gesner could not identify with those described by any previous author, appears from the subjoined quotation.* Gesner distinguishes two European species, giving a figure of each, one of his notices being "de Laniis, et primvm de cinereo"; the other "de alio Laniorvm genere maiore". Of his *Lanius cinereus*, which is cited by Linnæus as one of the bases of his *L. excubitor*, Gesner says that it was called in German Thorntråer or Thornkresser, "quasi torquispinum vel spinilanium", showing that in his time one of the marked habits of the Shrike was already a matter of common report. He also mentions that the bird was called in some places Nûntôder or Nûnmôrder, that is to say, Nine-killer, from the vulgar belief that this was exactly the number of birds which the Shrike was wont to destroy daily. This curious tradition survives to the present day, as witness the name "Nine-killer", still sometimes heard; and it also gave rise to Boie's generic name *Enneoctonus*. Gesner is less happy in his attempt to give the English equivalent of his bird's name, which he renders *ashirke anymurder* (*sic* in the copy before me; the fact being, that the Shrike does not shirk any murder it can commit! This author very often mistook our indefinite article for a part of the word succeeding it, and the printer may be answerable for the rest of the blunder). In another place, however, we find the word "Shrike" under the quasi-Latin form of *schricum*. The derivation of this English word is from *shriek*, one of a set of words, like *screak*, *squeak*, *screech*, and numberless others, in different languages and under various forms, which signify shrill kinds of outcry. The Anglo-Saxon name of the bird was *Scric*, and in the Danish

* "Lanivm cinereum nostrum, alij aliter Latine Græceve nominari posse coniecerunt, ego cum nulli veterum descriptioni satis eam accedere viderem, nouo nomine lanium appellare malui: quod in alias aues non solum se minores, sed maiores etiam aliquas laniando sæuire soleat." (Quoted from the ed. of 1617, which may not be literally true to the orig. ed. 1555.)

we find *Shrika*. The ordinary French name, *Pie grièche*, is simply *pica græca*, or Greek Pie. The name *excubitor*, adopted by Linnæus for one of the species, is the Latin word meaning a sentinel (literally, an "outlier"). It is no less happily chosen than *Lanius*, referring as it does to a characteristic habit of the Shrikes, which is to perch in wait for their prey, like sentinels.

§ 2.—*On the American Species of Lanius*

No more than two American species of this genus (one of them, however, being represented by two geographical races) have been satisfactorily established, though a large number have been successively ascribed to this country by different writers. It is the object of the present article to pass these several alleged species in critical review, in chronological order, and see what they amount to.

1. LANIUS EXCUBITOR, *L.* The well-known European species, wrongly ascribed to North America by Forster, Wilson, and others, whose accounts are to be turned over to *L. borealis* Vieill., to which they actually refer.

2. LANIUS LUDOVICIANUS, *Briss.* (See the full synonymy given beyond, p. 561.)

This name has had a checquered and rather curious history. We first find it in Brisson, ii. 1760, 162, covering an excellent description of a bird, now well known as the "Loggerhead Shrike", said to be from the then extensive and rather indefinite region of "Louisiana"; and the account is accompanied by a figure (pl. xv. f. 2), which we have no difficulty in recognizing, after we are informed what it is meant for. This same "Pie-griesche de la Louisiane" of Brisson became the Linnæan *Lanius ludovicianus*, and all is plain sailing so far, though Linnæus did not give a quite accurate diagnosis. But the compilers promptly attacked the bird, and made sad havoc with their operations at second-hand. Thus, in Latham's Synopsis, i. 162, where Brisson and Linnæus are both correctly cited, we are wrongly referred to Pl. Enluminée, no. 397, which is not a Shrike at all, but apparently a species of *Thamnophilus*. Gmelin naturally copies the mistake, through his habit of indiscriminate compilation, and also misquotes Brisson, citing the name *canadensis*, instead of *ludovicianus*, though he gives the page and plate of the latter correctly. Next, in the Index

Ornithologicus, Latham proceeds to mix up the true *L. ludovicianus* with a third species, namely, the "Black-crowned Shrike" of Pennant (= *L. americanus* Gm.), which he brings in here probably because Pennant merely surmised that his own Black-crowned Shrike "seems to be" Brisson's *L. ludovicianus*. Finally, all these mistakes are repeated by Latham in his general History, with a climax of error in the surmise that his *L. ludovicianus* (now become a thoroughly composite species, having no existence in nature) might be a variety of his *L. nengeta!*—which latter is itself an equally composite bird. This is, indeed, "confusion worse confounded".

Thus, as Swainson well remarks (FBA. ii. 119), "let us remember that we first began to lose sight of the true *L. Ludovicianus* by an unlucky error in the *Systema Naturæ* [where Linnæus gave a faulty description]; that it became more obscure in Gmelin's compilation; and that it was finally lost in the *Index Ornithologicus*, the *Ludovicianus* of which work and of the *General History* is an imaginary bird [*i. e.* a composite species]."

It may be further observed, that there is in Gmelin another "Lanius ludovicianus" (*Lanius tyrannus*, δ, *ludovicianus*), which is an entirely different bird, namely, the Kingbird, *Tyrannus carolinensis*.

3. LANIUS CANADENSIS, *L.* SN. i. 134, n. 4. (*Pie-griesche de Canada*, *Lanius canadensis*, BRISS. Orn. ii. 171, pl. 18, f. 3.—*Pie-grièche huppée de Canada*, BUFF. Pl. Enlum. 479, f. 2.—*Fourmillier huppé*, BUFF. Hist. Nat. iv. 476.—*Crested Shrike*, LATH. Syn. i. 182, n. 35; PENN. AZ. 239, n. 129.—*Lanius canadensis*, GM. SN. 298 (= Linn.); LATH. IO. ii. 72 (= Linn.).—*Lanius atricapillus*, GM. SN. 303.—*Turdus cirrhatus*, GM. SN. 826.—*Lanius pileatus*, LATH. IO. i. 76.—*Tyrannus atricapillus*, V. OAS. 78, pl. 48.—*T. canadensis*, V. OAS. 79, pl. 49.) This is neither a Shrike nor a North American bird, being a species of *Thamnophilus* of Cayenne, &c., originally described by Brisson from "Canada", probably by mistake for Cayenne.

4. LANIUS AMERICANUS, *Gm.* Syst. Nat. i. 1788, 308, n. 48. This is based upon the "Black-crowned Shrike" of Pennant, AZ. ii. 1785, 238, n. 128, said to inhabit "North America". Though Pennant says it "seems to be" the same as BRISSON, ii. 162 (= *L. ludovicianus*) and LATHAM, Synopsis, i. 162 (= Louisiane Shrike), his bird is clearly not a *Lanius;* nor is it a North American bird at all. Latham reproduces a "Lanius

Americanus" in his Index Ornithologicus, i. 69, n. 9, basing it, however, solely upon the *Pie-griesche de la Louisiane*, Pl. Enlum. 397.

5. LANIUS NATKA, *Gm.* Syst. Nat. i. 1788, 309, n. 50 (= *L. nootka*, LATH. IO. i. 1790, 80, n. 48; V. Ency. Méth. ii. 1823, 735). This is based upon the "Natka Shrike" of PENNANT, AZ. ii. 1785, 239, n. 130, described as from Nootka Sound. It has never been satisfactorily identified, but is evidently not a true *Lanius*, and probably not a North American bird at all.

6. LANIUS SEPTENTRIONALIS, *Gm.* Syst. Nat. i. 1788, 306, n. 37; LATH. IO. i. 1790, 76, n. 30; V. Ency. Méth. ii. 1823, 732, is based upon the "Northern Shrike" of LATHAM, Syn. i. 165, n. 11, described from "the northern parts of America". Bonaparte and some other authors revived the name for use in connection with *L. borealis*, to which, however, it cannot be properly referred. The species remains unidentified, and probably cannot be now made out.

7. LANIUS GRISCUS, *Bartr.* Trav. Fla. 1791, p. 289 *bis.* This name may have been intended to cover the larger of our two species, *L. borealis*, as it is ascribed to Pennsylvania, in distinction from another species accredited to Florida; but the account given does not suffice to decide the point.

8. LANIUS GARRULUS, *Bartr.* Trav. Fla. 1791, p. 289 *bis.* Undoubtedly intended for the Southern species, *L. ludovicianus*, but insufficiently described.

9. LANIUS BOREALIS, *Vieill.* OAS. i. 1807, 90, pl. 50. (See the full synonymy beyond, p. 558.) Here we have the first unmistakable and exclusive description of the larger of our two species, which had long previously been known, indeed, but referred to the European *L. excubitor*. Vieillot's bird appears to have been first taken up by Swainson, whose identification has been accepted by Audubon, Baird, and later writers generally, though the bird was for a while called by the unavailable name of *septentrionalis*, which Swainson very properly refused to recognize. Vieillot describes his bird minutely, leaving no doubt of what he meant, and in the Encyclopédie Méthodique he cites Wilson's plate 5, f. 1.

10. LANIUS ARDOSIACUS, *Vieill.* OAS. i. 1807, 81, pl. 51. This species is less satisfactorily characterized than the other one which Vieillot describes, but the sum and substance of the account leaves no necessary doubt that it is the Loggerhead Shrike, *L. ludovicianus* of Brisson. Swainson indeed, who dis-

cusses it elaborately, comes to the conclusion that it is "an imaginary species", that is to say, compounded of two; but his argument in this case does not seem to me sound. He admits, in fact, that were it not for a certain "if" which seems to me quite immaterial, he "should have at once concluded that his [Vieillot's] *ardosiaceus* was the same bird as Wilson's *Carolinensis*".

11. LANIUS CAROLINENSIS, *Wils.* Am. Orn. iii. 1811, 57, pl. 22, f. 5. Wilson gave us two species of Shrikes, one of which, "L. excubitor" Wils., *nec* L., is the *L. borealis* of Vieillot; and the other, to which Wilson gave the new name of *carolinensis*, is the *L. ludovicianus* of Brisson and Linnæus.

12. LANIUS EXCUBITORIDES, *Sw.* FBA. ii. 1831, 115, pl. 34. (See the full synonymy beyond, p. 562.) Swainson's description and beautiful figure first brought to notice the most common and widely distributed species of Shrike of North America—*borealis* being rather northerly, and typical *ludovicianus* being chiefly confined to the South Atlantic and Gulf States. No doubt, Swainson's bird had been seen before, and it may actually be involved in some of our accounts of each of the other species, but without being recognized as different from either one of them. It is, in fine, the usual style of Shrike of the United States, and the only kind that is known to extend into Mexico. It was currently rated as a good species until very recently, when I reduced it to its proper grade of a geographical variety, upon showing that the ascribed characters are found to merge insensibly into those of typical *ludovicianus*.

13. LANIUS ELEGANS, *Sw.* FBA. ii. 1831, 122. This species has given much trouble. It is minutely described by its author from a specimen in the British Museum, "to which it was presented, together with other birds from the fur-countries, by the Hudson's Bay Company". The name occasionally occurs in our literature (*e. g.* NUTT. Man. i. 2d ed. 1840, 287; BD. Rep. Great Salt Lake, 1852, 328; BP. Rev. et Mag. Zool. 1853, 295) entirely upon its original Swainsonian basis; and in 1870 (PZS. 595; see, also, RIDGW. Am. Nat. vii. 1873, 609), Messrs. Dresser and Sharpe announced, from examination of Swainson's type-specimen, that it was *L. lahtora* of Asia, described by some mistake as North American. So much for *L. elegans* of Swainson.

14. But Dr. Gambel, in 1843 (Pr. Phila. Acad. 1843, 261), de-

scribed a Shrike, *supposed to be* from "California", which he identified with Swainson's bird, and called *L. elegans*. Cassin (Pr. Phil. Acad. 1857, 213) and Baird (BNA. 1858, 328, note; ed. of 1860, atlas pl. 75, f. 1) accepted this identification of Gambel's specimen, subsequently called *Collyrio elegans* by Baird (BNA. 1858, p. xxxv.) and *Collurio elegans* by Baird (Rev. A. B. 1866, 444; Hist. NAB. i. 1874, 414). On other pages of the last-cited work, however, Baird renames Gambel's specimen *Collurio ludovicianus* var. *robustus*, giving it a new designation in view of the fact that the true *elegans* of Swainson had been shown, as above stated, to be an Old World species, *L. lahtora*. All these later citations of "elegans", resting solely upon Gambel's specimen, are, of course, to be carefully discriminated from those which refer to Swainson's type. Gambel's bird is said by Baird and Ridgway to be "very decidedly different from any of the recognized North American species"; and they also state that they have " no reason to discredit the alleged locality of the specimen". Under the circumstances, however, I shall decline to take further notice of the supposed species in the present work.

15. LANIUS MEXICANUS, *Brehm*, Journ. für Ornith. 1854, 145, 148 (see SCL. PZS. 1864, 173). The Shrike of Mexico, described as distinct by C. L. Brehm, seems to be reducible to *L. excubitorides*, with little probability of error. It may be noted, that though Swainson identified the Mexican bird with *L. carolinensis* Wils., this was done before he had distinguished *L. excubitorides*.

16. COLLYRIO CHEMUNGENSIS, *Gregg*, Pr. Elmira Acad. for 1870. A name bestowed upon some plumage of *L. borealis*, in which the rump is said to be "rufous".

§ 3.—*Of Shrikes in a State of Nature*

Having thus seen something of the figure Shrikes cut in the books, let us turn to a fairer and a broader page, to seek for those traits which have made these birds famous from time out of mind. I doubt not that the natural history of these "sentinels" and "executioners" is more attractive than what has just preceded; for all this naming and renaming distorts most grievously the clean-cut picture which the Shrikes present in their native haunts. We will here take up the Loggerhead and the Northern Butcher-bird together—for they are as

one in all essential particulars—reserving for after consideration the few points that mark their respective histories.

Looking at the bold, defiant aspect of the Shrike, however inadequately portrayed in the accompaying sketch, we cannot fail to recognize a bird of extraordinary spirit,—the stout, hooked beak, combining claw and tooth in one murderous instrument, is surely the weapon of a Hawk, or other rapacious bird! In one sense, we certainly have here a bird of prey; yet, if the portrait were finished at full length, we should find the feet as weak and harmless as those of a Thrush or Sparrow, instead of being furnished with the talons which confer such raptorial prowess upon the Falcon, the Eagle, and the Owl. If, furthermore, we should examine the anatomy of the Shrikes, it would be merely to discover that the entire structure of the internal organs is modelled after a strictly Passerine type. Though the bone and muscle indicate unusual strength and vigor, the beak itself is the seal of the Shrike order—a mark as plain and unmistakable as that which stamps the tribes of Israel, wherever dispersed over the earth—the symbol of a spirit as bold and reckless as ever dwelt in the breast of any one of the Hawks called "noble" in the olden time, when falconry beguiled the leisure hours of kings and royal mistresses.

FIG. 66.—Aspect of a Shrike.

Matching the bravest of the brave among birds of prey in deeds of daring, and no less relentless than reckless, the Shrike compels that sort of deference, not unmixed with indignation, we are accustomed to accord to creatures of seeming insignificance, whose exploits demand much strength, great spirit, and insatiate love of carnage. We cannot be indifferent to the marauder who takes his own wherever he finds it—a feudal baron who holds his own with undisputed sway—an ogre whose victims are so many more than he can eat, that he actually keeps a private graveyard for the balance.

Lest such a picture may seem to be exaggerated, let me

make good my statements. The Shrike's food consists of such birds, quadrupeds, and reptiles as he can capture and overpower, together with insects, chiefly of the larger kinds, and especially grasshoppers. These he pursues, attacks, and destroys quite as a Hawk does; and he has the very curious habit of impaling their bodies upon thorns.

Numberless illustrations of the spirit the Shrike displays might be given. Though smaller in stature than the least of our Hawks, he habitually destroys birds and other animals as large as those upon which some Hawks subsist, and quite as capable of resisting attack. Appropriating to himself sufficient territory, where no other bird may safely intrude, he becomes the terror of the neighborhood; and woe to the unlucky Finch or Warbler that ventures to trespass on these hunting-grounds! Like a veritable sentinel on guard, the Shrike stands in wait upon his chosen post, ready to pounce with unerring aim upon the first little bird that may dare to rustle in the nearest bush. His impetuosity and temerity are well displayed in the onslaught he sometimes makes upon cage-birds hanging at our windows; and he has even been known to enter an apartment, bolting through the open sash with perfect recklessness. Dr. Brewer narrates the case of a Shrike who dashed at a Canary without perceiving that the window was closed. He struck the glass with all the momentum of his impetuous flight, and fell to the ground, stunned by the force of the blow.* He revived, however, and was kept in confinement for some time, during which he continued sullen and fearless, and greedily devoured small birds which were offered him for food, though refusing to eat raw meat of other kinds. Notwithstanding the protection that a cage affords, Canaries are not seldom killed by the Shrike unless speedily relieved from his attack. Sometimes they are so terror-stricken that they fall fainting to the bottom of the cage; but they oftener flutter and dash themselves against the wires, till seized by the bird of prey, who scalps them, breaks in their skull, or takes their heads off. The small birds that

*A similar instance of birds' inability to see glass is within my own experience. Having on one occasion netted a large lot of Sparrows and other small birds alive, I turned them loose in a vacant room. In their terror and eagerness to escape, almost every one of them dashed against the window in the course of a few moments, and successively fell stunned and shivering to the floor—some to recover, others, more seriously hurt, to die shortly.

the Shrike destroys in a state of nature are either captured at a single dash, or caught in open chase, and killed with a blow of the beak. They are then devoured upon the spot, or carried to the "cemetery" and stuck upon a thorn, as I shall presently describe with more particularity.

As if conscious of his prowess, the Shrike shows little fear in the presence of man. Under some circumstances, indeed, I have found a Shrike so wild that my endeavors to get a shot were unavailing, but the very opposite is oftenest the case. You may enter the thicket the Shrike has chosen as his hunting-ground, and the bird will regard you with contempt, returning your regard with a gaze as steady and unflinching as if he were the better man of the two and knew it. At such a time, you will have a good opportunity to observe the easy nonchalant air with which he asserts himself. For all that the Shrike is such a gallant marauder, it must not be inferred that he is always on the war-path, intent on prodigies of valor. The doughtiest knights lay aside their armor at times, and the Shrike is fond of his ease in the intervals of his piratical enterprises. At such times, you may observe him lounging about with his hands in his pockets, so to speak, and nothing on his mind, when, as you approach, he will turn his head toward you with languid curiosity, just for a moment, and then dismiss you from further consideration. Sometimes you will see him ready for business, scanning the neighborhood closely from his watch-tower on the topmost twig of some bush or sapling, where he stands stiffly, bolt upright, like a soldier on dress parade, ready to move at a moment's warning. He makes a rather imposing picture just then in his uniform of French gray with black and white facings, which fits him "like a dream": the next instant—whish! he is gone, and the piteous cry of the Sparrow in yonder bush tells the rest of the story.

A good deal of the Shrike's business, however, is neither brilliant nor romantic. The green sward below his perch harbors a great many field-mice of different kinds, according to the lay of the land, and he has nothing to do but drop quietly down upon these little innocents. At certain seasons of the year, moreover, the fields swarm with grasshoppers, of which the Shrike is very fond, as he is also of spiders, beetles, caterpillars, and, in fact, almost any insect. In July and August, I have frequently seen Shrikes skipping about in old weedy fields, apparently amusing themselves; but I generally found, on watching them

closely, that they were hunting for the 'hoppers, some of which they devoured then and there, after beating off their long hind legs, while others were carried to some tree near by and duly impaled.

The tradition that the Shrike destroys exactly *nine* victims a day, and which is preserved in the name "Nine-killer", still sometimes heard, is very ancient, and I do not know to what source it may be traced back. It is a staple myth, which has been current for centuries in folk-lore, and may be found related with gravity in some of the older treatises. I should very much like to learn its source and the circumstances under which it was first stamped with authority. The Shrike's most notable trait,—the habit of keeping a butcher-shop, where the bodies of the slain are exposed,—has also been remarked for many hundred years, and various ingenious theories have been proposed to explain what has been considered a wholly exceptional and anomalous habit. When fully considered, however, I think it will be found less singular than it at first appears to be.

The Shrike is a veritable "butcher-bird", in as far as that title may be given to a bird who kills what he does not eat, and his operations in this line have been made the subject of repeated observations, so that we are in possession of all the facts in the case. The birds, mice, and insects are sometimes impaled alive, and left to perish miserably; sometimes their dead bodies are similarly stuck upon the sharp twigs. The shambles of the pitiless butcher may be found in some thorny tree or bush, which in the course of time presents a curious spectacle, with the numerous creatures sticking here and there. Quite a museum of anatomy is sometimes thus brought together in one place, but as the Shrike is not particular about making a collection of curiosities, we may recognize his work in single specimens scattered anywhere about fields and shrubbery.

Some have surmised that the bodies are stuck up in this conspicous way as decoys, to allure other victims within reach. This "bait theory" in its fulness is set forth in the article noted below,* which may be taken as a typical illustration of this way of thinking. Mr. Heckewelder represents that whereas the Shrike lives entirely upon mice and small birds (which is

* 1799. HECKEWELDER, J. A letter from Mr. John Heckewelder, to Dr. Barton, giving some account of the remarkable instinct of a bird called the Nine-Killer [Lanius borealis]. < *Trans. Amer. Philos. Soc.* iv. 1799, pp. 124, 127.

not the case), and whereas the grasshoppers are all stuck up in natural attitudes as if they were alive (though they are not so fixed, in fact), therefore this is done to decoy birds that feed upon grasshoppers; for if this be not so, and if the insects be stored up for future use, how long would one or even two grasshoppers last a Shrike? But if the intention be to seduce little birds, then that number, or half as many, or fewer still, would be good bait all winter. And so forth.

Wilson, with his usual good sense, has disposed of this theory, "pretty fanciful," as he calls it, in a rather satirical as well as practical way. He notes that grasshoppers themselves are the favorite food of the Shrike, and that they would make the very poorest bait for our small winter birds, which are mostly granivorous; that there is no necessity for a stratagem of such refinement and cruelty, as the Shrike is abundantly able to capture all the birds he wants in open chase; and, finally, that the Crow and Jay may be supposed with equal probability to be laying baits for mice and flying squirrels, when they hoard up their corn. The bait theory may be safely discarded.

Another idea is, that the Shrike avails himself of a thorn to secure his prey whilst he is devouring it, just as a Hawk or Owl would use his claws for the same purpose; and that this has become such a habit that the Shrike may spit, and then leave untouched, the carcases he does not wish to devour. Undoubtedly, the bird's feet and claws are weak in comparison with his stout beak, large head, and powerful muscles of the neck and breast; but no one can doubt the bird's ability to hold his prey securely while he tears it to pieces. Any one who has had a Shrike scratch him should be satisfied of this.

There is another notion, that the Shrike impales his victims in the excess of his cruelty, from sheer love of inflicting pain. But this argues a moral obliquity which we can ascribe to no bird,—if indeed any moral quality whatever can be discovered in their actions. It is true that a cat tortures a mouse, and seems to delight in inflicting pain. I cannot but believe, however, that the cat is unconscious of the mouse's misery; that what she enjoys is not the suffering of her victim, but the exercise of her natural powers. Excessive destructiveness, as when cats or weasels kill more animals than they can devour, is very frequent; but it implies neither cruelty (in a moral sense) nor mere wantonness; it is a legitimate result of their rapacious nature, and for the rest, the animals may have a

natural preference for some part of their prey, as the blood or brains, to secure enough of which they take more lives than they would if they fed upon the whole of the flesh. In the case of the Shrike, moreover, it is certainly the rule that the bodies are impaled after death, not while still struggling in the clutches of the captor.

Analogy goes for something in natural history; and the analogy of the Shrikes' shambles to the storehouses of various birds is too obvious to have escaped attention. I think the right clue to the curious habit is thus found. Many birds lay up stores of provisions, like mice and squirrels. Among those of this country, birds of the Corvine tribe, as Crows and Jays, are conspicuous in this respect. The "thievishness" of the Raven and Magpie in confinement is notorious; but it is simply the excessive development or perversion of their habit of hoarding food that makes them steal and hide away articles of no possible use to them, such as jewelry and silverware. The Californian Woodpecker offers another notable instance of storing up food, as it does sometimes with infinite pains. I have seen branches of trees studded thickly with acorns, each stuck tightly by itself in a little hole bored by the bird for its reception. In other instances, the same bird has been known to insert acorns in the natural crevices of wood. These facts relate indeed only to the hoarding of fruits or inanimate objects; but we see a still closer resemblance to the habit of the Shrikes in the curious practice of the Red-headed Woodpecker, a versatile bird, one of whose singular traits has just been told by Mr. H. B. Bailey, of New York. This writer narrates * that a correspondent of his observed a Woodpecker's frequent visits to an old oak post, which on examination was found to present a large crack, in which the bird had inserted about a hundred live grasshoppers, and wedged them in so firmly that they could not escape. Some farmers showed him other posts which had been put to the same purpose. This was certainly a laying-up of stores for future use, for the writer states that the Woodpecker later began to eat his hoard, and that at length only a few shrivelled dead 'hoppers were left.

Wilson has observed, furthermore, that Jays and Shrikes retain similar habits in confinement; the Jay filling every seam and chink in his cage with grain and bread-crumbs, and the

* Bull. Nutt. Ornith. Club, iii. no. 2, April, 1878, p. 97.

Shrike "nailing" meat, insects, and the bodies of such birds as may be thrown to him.

I have had my doubts in this matter; and still, after observing Shrikes carefully in various parts of the country, must admit that the matter is not finally narrowed down to a simple question of hoarding. Too many bodies are stuck up, too promiscuously, and too few are made use of afterward, for us to consider it simply as a piece of the bird's thrift. I suppose the habit of impaling, considered simply as such, and without reference to ulterior purposes subserved, may have been gradually acquired as the result of the Shrike's physical organization—the relatively little force of grasping with his feet he possesses, in comparison with the power of his beak. The talons of a Hawk, for example, are very effective instruments, not only for striking and killing prey, but also for holding it while it is torn by the beak. The Shrike has much less prehensile power; it strikes with the beak, and devours as best it may. A Nuthatch, for example, will take an acorn to a crack in the bark, and wedge it there while it hammers away at it with the bill. Such a habit of fastening its prey having been acquired, as something entirely unconnected with the storing up of provisions, may then have been turned to account as a means of securing its prey for future use, and thus become the usual way of making a hoard.

It is certain, however, that the Shrike makes no great use of his larder; and that he sometimes impales and sometimes not, apparently at his caprice. He is just as likely to eat a grasshopper as to stick one. He spits its victims as often when food is plenty as when it is scarce; and the majority of the bodies gibbeted are left to wither and be blown away, or be eaten up by the bugs. On one occasion, when I watched a Shrike closely for some time, I saw him impale a number of grasshoppers in succession, and continue foraging for more, which he ate upon the spot, as soon as caught. I never witnessed the act of impaling a bird or mouse, but I suppose it would be the same as for a grasshopper; and in the instance to which I refer the bird worked the unfortunate insect on the thorn with his beak, pushing and pressing it down with various strokes, until it was fixed to his satisfaction.

But we have not yet finished our study of Shrikes—having still to consider their flight, their voice, and especially their domestic habits.

There are two very different birds of this country which the Shrike resembles in the relative proportions of the wings and tail, as well as in the general conformation of the body. These are the Mockingbird, *Mimus polyglottus*, and the Sharp-shinned Hawk, *Accipiter fuscus*. Now if we picture to ourselves a bird whose attitudes, movements, and especially whose mode of flight, may partake on occasion of those of either of the birds just named, we shall have no wrong idea of the varied actions of which the Shrike is capable. The close general resemblance of the Shrike to a Mockingbird is really remarkable. The two are of about the same size, shape, and color—in fact, it is not the easiest thing to tell them apart at a little distance, especially when they are flying. The similarity has long since been duly noted and commented upon; in fact, Swainson went so far as to make it the basis of a strong argument in favor of his fanciful quinarian theory of affinity. The mode of flight, then, of the Shrike, under ordinary circumstances, is necessarily much the same as that of a Mockingbird, being light, wayward, and even undulatory, when the bird is simply moving about at his ease, or foraging for the humbler kinds of prey that contribute to his support. Yet even under these conditions there is a certain dash about it, giving hint of the spirit he can infuse into his actions when he calls his powers to their full display. Then, in the manner of the Hawk, his flight is strengthened, firmly sustained for long distances, and on occasion quickened at a prodigious rate; the climax of this exploiting being reached when he plunges headlong after his prey, hurtling like a very Hawk. He is said at times to hover in the air, just over his intended victim, as if taking aim before he stoops to his quarry; but this can hardly be a characteristic habit, or it would not have escaped my attention. I do not remember to have ever witnessed it, though it need not be doubted that the action is sometimes performed. When not on the wing, we may observe in the Shrike's habitual attitudes the same blending of Mockingbird and Hawk; or rather, the transition from one to the other, when his air of indifference and rather "slouchy" appearance give way to the martial bearing which indicates that his attention is riveted upon intended conquest.

So versatile and animated a spirit as that which the Shrike possesses necessarily seeks expression. There is no reticence about this bird, whose harsh outcries we may in turn interpret

to mean anger and exultation—the challenge and the conquest—while the course of his passionate life runs on in almost incessant warfare. These notes mean much the same as the stridulation of the Kingbird, in whose temper there is much of kinship with the Shrike, both being impatient and aggressive birds. But notwithstanding the magnitude of his exploits, the Shrike is not a very lofty character after all; he picks many a needless quarrel with his fretful fellows, and all the petulance of a wilful, badly governed disposition may be traced in some of the harshest of the cries that greet our ear. It is easy to say, and quite safe to make the assertion, that nothing more unmusical than the Shrike's notes is often heard; and it is usual to compare the voice of this bird to the creaking of a sign-board, or the grating of any other rusty hinge. But I suspect, though I am not a competent witness in this case, that those are right who ascribe to the Shrike some powers of song, limited though they be. Technically speaking, the Shrike is as truly Oscine as the Mockingbird itself; and no *à priori* reason appears why his notes should not at times be modulated with a tuneful quality. Several authors have in fact asserted such to be the case, protesting fairly against any sweeping denunciation in this particular. Thus, in speaking of the Great Northern Shrike, Audubon says:—"This valiant little warrior possesses the faculty of imitating the notes of other birds, especially such as are indicative of pain. Thus it will often mimic the cries of Sparrows and other small birds, so as to make you believe you hear them screaming in the claws of a Hawk; and I strongly suspect this is done for the purpose of inducing others to come out from their coverts to the rescue of their suffering brethren. On several occasions I have seen it in the act of screaming in this manner, when it would suddenly dart from its perch into a thicket, from which there would immediately issue the real cries of a bird on which it had seized." Dr. Bachman further states that the Loggerhead has other notes than the grating sounds Audubon attributes to it:—"During the breeding season, and indeed nearly all summer, the male ascends some cedar or other tree, and makes an effort at a song, which I cannot compare to anything nearer than the first attempts of a young Brown Thrush. He seems to labour hard, making as it were almost painful exertions. At times the notes are not unpleasing, but very irregular." Many later observers concur in attributing moderate musical

ability to the Shrike, and I consider the fact established, though I have never myself heard a bird of this kind sing. But I am very sceptical respecting his asserted powers of mimicry; for the few allegations of mockery we possess seem to be traceable to one or two sources, and to demand further confirmation.

But we complete the portraiture of no bird's life and character until we place the nest in the foreground of the picture, with all its natural surroundings. Our two kinds of Shrikes, indeed, breed wide apart, and in some of the little details of their domestic economy they may differ, but the general course of events is the same in either case—"*cœlum non animum mutant*", whether they be Loggerheads in South Carolina or greater Butcher-birds in the northern wilderness. Knowing our bird as we do now, we might suppose that he would make love or war with equal assurance of success, and there is no doubt of the fact that a Shrike is an impetuous and audacious wooer. The main point is, however, that in operations of this kind he has to deal with no shrinking, terrified Lark or Sparrow, glad to make any terms with the tyrant, but with a bird who proves to be his match in every particular. Set a Shrike to tame a shrew—pit a pirate against a virago—and the whole neighborhood may be congratulated when the stormy scene is over. About the time the courtship grows a little monotonous, you may look through the convenient thicket, where the saplings, bushes, and weeds are grown up close together, or along yonder hedgerow, with its lattice-work of creepers and greenbrier, to find the nesting-place of the redoubtable couple. It will not be hard to find, for the birds build low, and make a structure as bulky in proportion to their size as a Hawk's nest. It is commonly built in a bush or sapling, within arms' reach from the ground, the nest proper resting upon an extensive basement of stout twigs, rather loosely laid together and bristling in all directions. Upon such a support, the inner nest is built, of an endless variety of soft, fibrous, vegetable substances, such as grass-stems, weed-tops, bark-strips, catkins, leaves, mosses, lichens, &c., all matted together in such quantity that the cavity within is greatly reduced by the thickness of the walls. Some nests also contain feathers or fur felted in with the rest of the materials. There seems to be a good deal of difference in the structure of the nest, not so much according to the species, as to the climate. The northern-built nests are usually

found to be more compactly built, with a greater quantity of soft, warm material, than those of the Loggerhead in the Southern States, which are smaller, more open, and rather loosely woven than closely felted.

In such a bulky and rather rude receptacle, though a very substantial one, no fewer than five or six eggs may be deposited, for a Shrike is as much in earnest in these matters as in the other affairs of life. These vary in size, of course, according to the species, the eggs of the Northern Shrike being about 1.10 by 0.80 inches, while those of the White-rumped, or Loggerhead, only measure, on an average, little if any over an inch in length by three-fourths as much in breadth. They are shaped and colored exactly alike, however, being of rounded oval form, quite blunt at the smaller end, and so profusely speckled or marbled all over with various brownish, reddish, and purplish shades that the greenish-gray ground-color is scarcely perceptible. Should nothing go amiss, it is not long (Audubon says fifteen days in the case of *borealis*) before the nest is crowded with a clamorous and voracious brood, whose wants are an incesssant tax upon the energy and devotion of the parent birds. The care of the youngsters would seem to give them all they can attend to, leaving no time for house-cleaning; for, should you come upon a family of Shrikes, well grown and soon to leave the nest, you would find things in an extremely untidy condition.

One nestful after another being thus turned loose upon the world, the tribe of Shrikes waxes. Being prolific, and having few enemies besides man, they are common birds in most portions of the country, and we readily perceive that they play an important *rôle* in nature's economy. I must confess that I have not drawn altogether the most flattering picture, even though I have given the doughty warriors full credit for their military operations; and I am therefore the more anxious to show what extremely useful birds they are, from the most practical standpoint possible. So far as the Shrike's relations with ourselves are concerned, the balance is entirely on one side of the ledger. We are enormously in debt to these efficient destroyers of noxious insects and injurious quadrupeds. Though they kill many a bird we should wish to live, the whole result in this regard is practically nothing to offset the check they put in the aggregate upon grasshoppers and other undesirable forms of insect life.

Nay, more, the Shrike is entitled to our special thanks and most favorable consideration, for his interference in our behalf

against the bird-pest of this country—the European Sparrow. In taking counsel with herself, that she might right the balance of her forces, which we so fatuously interfered with when the Sparrow madness seized us, she bethought herself of the Shrikes, and in her own mysterious way she summoned these trusty allies to her aid. The Shrikes, nothing loth, went right to work, and were abating the nuisance very perceptibly, when Bostonese idiocy confronted them and cut short their righteous warfare. Men shot them down in the very acts of destroying Sparrow after Sparrow; at each murderous discharge of the gun, a noble Shrike was martyred in doing his best for the good of the community. I do not know who is responsible for this outrage. I hope that it was merely the blunder of some ignorant underling, not instigated by any one professing or reputed to be an ornithologist. If the act was committed under the color of legal authority, there is work for the Nuttall Ornithological Club to do in enlightening the community respecting their real interests. Boston could hardly do a wiser thing, as far as the Sparrow plague is concerned, than support a colony of Shrikes.

The Great Northern Shrike

Lanius borealis

Lanius excubitor, in part, of the early systematic writers, being partly based on *Cates.* Car. App. 36.

Lanius excubitor, *Forst.* Fn. Amer. Sept. 1771, 9; Philos. Trans. lxii. 1772, 386, n. 9.—*Wils.* AO. i. 1808, 74, pl. 5, f. 1.—*Bp.* Journ. Phila. Acad. iii. 1824, 357; iv. 1824, 272.—*Aud.* OB. ii. 1834, 534, pl. 192.

? Lanius griseus, *Bartr.* Trav. Fla. 1791, 289 *bis.*

Lanius borealis, *V.* OAS. i. 1807, 90, pl. 50.—*V.* Ency. Méth. ii. 1823, 728, n. 5.—*Sw. & Rich.* FBA. ii. 1831, 111, pl. 33.—*Towns.* Journ. Phila. Acad. viii. 1839, 152.—*Aud.* Syn. 1839, 157.—*Aud.* BA. iv. 1842, 130, pl. 236.—*Gir.* BLI. 1844, 155.—*Gray,* G. of B. 1847, 294.—*Smith,* Zoologist, vii. 1849, 2495 (Scotland).—*Garth,* Zoologist, viii. 1850, 2649 (same).—*Hoy,* Pr. Phila. Acad. 1853, 308.—*Thomps.* Vermont, 1853, 75, fig.—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 582 (Illinois).—*Pratten,* ibid. 605 (same).—*Putn.* Pr. Ess. Inst. i. 1856, 213.—*Cass.* Pr. Phila. Acad. 1857, 212.—*Maxim.* J. f. O. vi. 1858, 190.—*Jones,* Nat. Bermuda, 1859, 51.—*Martens,* J. f. O. 1859, 212 (Bermudas).—*Willis,* Smiths. Rep. for 1858, 1859, 281 (Nova Scotia).—*Turnb.* B. E. Pa. 1869, 26; Phila. ed. 19 (Alleghanies, breeding).—*Dress. & Sharpe,* PZS. 1870, 591 (monographic).—*Trippe,* Pr. Ess. Inst. vi. 1871, 117.—*Finsch,* Abh. Nat. Ver. Brem. iii. 1872, 39 (Alaska).

Collyrio borealis, *Bd.* BNA. 1858, 324.—*Coop. & Suckl.* PRRR. xii. pt. ii. 1859, 188.—*Wheat.* Ohio Agric. Rep. for 1860, 1861, 364.—*Barn.* Smiths. Rep. for 1860, 1861, 436 (Pennsylvania).—*Coues & Prent.* Smiths. Rep. for 1861, 1862, 409 (Washington, D. C.; rare).—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 162.—*Verr.* Pr. Ess. Inst. iii. 1862, 148.—*Boardm.* Pr. Bost. Soc. ix. 1862, 126.—*Blakist* Ibis, 1862, 5; 1863, 65.—*Allen,* Pr. Ess. Inst. iv. 1874, 66.—*Feilner,* Smiths. Rep. for 1864, 1865, 425 (California).—*Coues,* Pr. Phila. Acad. 1866, 73 (Fort Whipple, Ariz.).—*Lord,* Nat. in Vanc. ii. 1866, 295.—*Lawr.* Ann. Lyc. N. Y. viii. 1866, 285 (New York).—*McIlwr.* Pr. Ess. Inst. v. 1866, 87.—*Allen,* Am. Nat. i. 1867, 42.—*Woodh.* Am. Nat. ii. 1868, 380.—*Fowler,* Am. Nat. ii. 1868, 659.—*Coop.* Am. Nat. iii. 1869, 35.—*Abbott,* Am. Nat. iv. 1870, 545.—*Lockwood,* Am. Nat. vi. 1872, 236.—*Haym.* Cox's Geol. Surv. Indiana, 1869, 219 (habits).—*Dall & Bann.* Tr. Chicago Acad. i. 1869, 280.—*Stev.* Ann. Rep. U. S. Geol. Surv. Terr. for 1870, 1871, 464.

Collurio borealis, *Bd.* Rev. AB. 1866, 440.—*Coues,* Pr. Ess. Inst. v. 1868, 277.—*Coop.* B. Cal. i. 1870, 137.—*Coues,* Key, 1872, 125, f. 73.—*Aiken,* Pr. Bost. Soc. xv. 1872, 198 (Colorado).—*Mayn.* Pr. Bost. Soc. xiv. 1872, 370.—*Ridgw.* Bull. Ess. Inst. v. 1873, 181 (Colorado).—*Ridgw.* Am. Nat. vii. 1873, 609.—*Merr.* U. S. Geol. Surv. for 1872, 1873, 677.—*Trippe,* Pr. Bost. Soc. xv. 1873, 235.—*Coues,* BNW. 1874, 101.—*B. B. & R.* NAB. i. 1874, 415, pl. 19, f. 1, 2.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 13.—*Hensh.* ibid. 1874, 43.—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 233.—*Gentry,* Life-Hist. 1876, 234.—*Minot,* BNE. 1877, 161.—*Brew.* Pr. Bost. Soc. xvii. 1875, 440.

Lanius septentrionalis, *Bp.* Ann. Lyc. N. Y. ii. 1826, 72, 438 (not Gmelin's bird of that name, which is not identified).—*Bp.* CGL. 1838, 26.—*Gamb.* Journ. Phila. Acad. i. 1847, 44 (California).—*Gamb.* Pr. Phila. Acad. 1847, 44 (California).—*Peab.* Rep. Orn. Mass. 1839, 291.—*Bp.* CA. i. 1850, 363.—*Bp.* Rev. Mag. Zool. 1853, 294.—*Read,* Pr. Phila. Acad. 1853, 397 (Ohio).—*Cass.* Pr. Phila. Acad. 1857, 213.—*Kneel.* Pr. Bost. Soc. vi. 1857, 234.—*Murray,* Edinb. N. Philos. Journ. xi. 1859, 223.

Collyrio chemungensis, *Gregg,* Pr. Elmira Acad. i. 1870, — (p. 9 of reprint).

Great Butcher Shrike, White Whiskijohn, *Forst.* l. c.

Great Shrike, *Penn.* AZ. ii. 1785, 238, n. 127 (in part; but also includes *L. excubitor*).

Pie-grièche boréale, *V.* l. c.

Grand Ecorcheur, *Le Moine,* Ois. Canad. 1861, 222.

Great American Shrike, Northern Shrike, Butcher-bird, *Authors.*

Hab.—North America, northerly; south in winter to about 35°. Alleghanies, breeding (*Turnbull*). Bermudas (*Jones*).

Ch. sp.— ♂ ♀ *Cæruleo-canus, fronte, strigâ superciliari, scapularibus tectricibusque caudalibus superioribus albicantibus; infrà albus, fusco transversim undulatus; alis caudâque nigris albo-notatis; vittâ transoculari nigrâ.*

♂ ♀, adult: Upper parts clear bluish-ash, bleaching on the ends of the scapulars and on the upper tail-coverts. Below white, more or less vermiculated with fine, wavy, transverse, dusky lines. A black bar from the base of the upper mandible past the eye to the ends of the auriculars, not meeting its fellow on the forehead, and not enclosing the eye; this stripe bordered above with hoary white, which extends across the extreme forehead; lower eye-lid white. Wings black, many or most of the quills tipped with whitish, and a large white spot at the base of the primaries. Tail black, the outer feather with its outer web and half or more of the inner web white, the next three or four white at the end for successively decreasing distances. Bill and feet plumbeous-black; eye blackish. Length, about 10 inches; extent, 14¼; wing, 5½; tail rather more; bill, ⅞; tarsus, 1 or less; middle toe and claw, ¾.

Young: The colors much less pure and clear. Above grayish-brown, scarcely or not whitening on the scapulars, tail-coverts, and forehead. The younger the browner, sometimes almost with a rusty tinge; grayer according to age. Below brownish-white (the younger the browner), the wavy dark markings stronger than in the adult. The bar along the head poorly defined, merely dusky, or quite obsolete. Wings and tail brownish-black, with less white than in the adult. Bill plumbeous-brown, flesh-colored at base below.

At a very early age, the upper parts are probably vermiculated somewhat like the lower, as in the same stage of *L. ludovicianus;* but this state I have not observed. In old age, the dusky vermiculation of the under parts is

much diminished, but I have never seen it absent altogether. This feature, coupled with the particular character of the head-markings and the large size and compartively short tarsi, will always distinguish the species from *L. ludovicianus* or *excubitorides*, and although the upper parts are paler than in the last, there is less white on the scapulars and tail-coverts.

THIS species is very properly called the Northern Shrike, or Butcher-bird, since its boreal *habitat* is the principal point in its history in comparison with the Loggerhead and White-rumped Shrikes. It is found in all portions of the Fur Countries up to the limits of arboreal vegetation, if not still farther north. In those regions, it is said to be called the "White Whiskey-John" from its resemblance to the Canada Jay, *Perisoreus canadensis*, commonly known as the "Whiskey-John", by a corruption of its Indian name *Wiskachon*. Some individuals not only pass the breeding season in these high latitudes, but reside there throughout the year. The greater number, however, migrate in the fall, and become generally dispersed through the United States during the winter. This migration is nevertheless restricted to some extent, Shrikes of this species being far more numerous in the Northern and Middle than in the Southern States. On the Atlantic side, I have traced the Butcher-bird no farther south than Washington, where it is rare, though a few may be seen in the course of a winter, especially in severe weather. At Prescott, Arizona, I once secured a specimen which I found dead in a house, behind a piece of furniture, where it had taken refuge during a storm. This occurred at the residence of Dr. G. C. Leib, whom I was then called to attend in his last illness. His name will be remembered by ornithologists in connection with his papers in the Journal of the Philadelphia Academy on *Fuligula "grisea"* and on the nest and eggs of the Coot and Blue-winged Teal. Ridgway found it in Nevada, and Henshaw in Southern Utah; while both Mr. Aiken and Mr. Trippe attest its regular appearence in Colorado. Audubon speaks of the occurrence of the species as far south as Natchez, Mississippi, and states that it is not rare in Kentucky during the winter. We have also many advices from the interior States; but I never saw anything of the bird in either of the Carolinas, and I believe that it has never been heard of in the South Atlantic States. It has occurred in the Bermudas.

Though thus decidedly Northern, and chiefly a migrant into the United States, this Shrike is well known to nestle occa-

sionally in mountainous districts from the Middle States northward; and I make no sort of doubt that it will also be found to breed in various of the mountain ranges of the West. In narrating an instance of its nesting on the last of April on a low spruce-tree in New Brunswick, within twelve miles of St. Stephen, Dr. Brewer is certainly mistaken in asserting that "we know of a single recent instance in which this bird has bred within the limits of the United States". If the testimony of competent observers is to go for anything, its nesting in mountainous parts of our country is a regular occurrence. Thus, "many nestle on the mountain ridges of the Alleghanies," says the Rev. Dr. Turnbull (1869). Mr. Minot also states, without qualification, that "they breed in the forests of Northern Maine", and such is unquestionably the fact.

The Common American Shrike

Lanius ludovicianus excubitorides

a. ludovicianus

Lanius ludovicianus, *Briss.* Orn. ii. 1760, 162, pl. 15, f. 2 ("Louisiana"; descr. orig.).—*L.* SN. i. 1766, 134, n. 6 (based on Briss. ii. 162, pl. 15, f. 2).—*Gm.* SN. i. 1788, 298, n. 6 (in part only; same primary basis, but also quotes PE. 397. Not to be confounded with Gmelin, p. 302, n. 138, which is *Tyrannus*).—*Lath.* IO. i. 1790, 69, n. 8 (in part).—*Turt.* SN. i. 1806, 174 (= Gm.).—*Bp.* Ann. Lyc. N. Y. ii. 1826, 26, 72.—*Aud.* OB. i. 1831, 300, pl. 37.—*Bp.* CGL. 1838, 26.—*Aud.* BA. iv. 1842, 135, pl. 237.—*Bp.* CA. i. 1850, 363.—*Burnett,* Pr. Bost. Soc. iv. 1851, 116.—*Gerhardt,* Naum. iii. 1853, 38.—*Bp.* Rev. Mag. Zool. 1853, 295.—*C. L. Brehm,* J. f. O. 1854, 145, 148 (monographic).—*Gundl.* J. f. O. 1855, 469 (Cuba [???; *cf.* J. f. O. 1861, 404]).—*Kennic.* Tr. Illinois Agric. Soc. i. 1855, 582 (Illinois).—*Putn.* Pr. Ess. Inst. i. 1856, 228 (attributed at second-hand to Massachusetts).—*Cass.* Pr. Phila. Acad. 1857, 213 (monographic).—*Bland,* Rep. Smiths. Inst. for 1858, 1859, 287 (Bermuda).—*Dress. & Sharpe,* PZS. 1870, 595 (monographic; includes *excubitorides*).

Collyrio ludovicianus, *Bd.* BNA. 1858, 325.—*Tayl.* Ibis, 1862, 128 (Florida).—*Gedney,* Am. Nat. iii. 1869, 159.

Collurio ludovicianus, *Bd.* Rev. AB. 1866, 443.—*Coues,* Pr. Bost. Soc. xii. 1868, 112 (South Carolina; habits).—*Allen,* Am. Nat. iii. 1869, 579, 580; vi. 1872, 266.—*Purdie,* Am. Nat. vii. 1873, 115 (Massachusetts, typical—see Bull. Nutt. Club. ii. 1877, 21).—*Ridgw.* Am. Nat. vii. 1873, 609.—*Merr.* Am. Nat. viii. 1874, 8, 87.—*Wheat. apud Coues,* BNW. 1874, 233.—*B. B. & R.* NAB. i. 1874, 418, pl. 19, f. 4.—*Brew.* Pr. Bost. Soc. xvii. 1875, 441 (New England).—*Merr.* Tr. Conn. Acad. iv. 1877, 34 (Connecticut).—*Langd.* List B. Cincinnati, 1877, 8 (Ohio).—*Allen,* Bull. Ess. Inst. x. 1878, 15 (Massachusetts; three authentic instances).

Lanius garrulus, *Bartr.* Trav. Fla. 1791, p. 289 *bis* (Florida).

Lanius ardosiacus, *Vieill.* OAS. i. 1807, 81, pl. 51.

Lanius ardosiaceus, *V.* Ency. Méth. ii. 1823, 729, n. 8.

Lanius ardesiaceus, *? Bp.* PZS. 1837, 112.

Lanius carolinensis, *Wils.* AO. iii. 1811, 57, pl. 22, f. 5.—*Bp.* Journ. Phila. Acad. iii. 1824, 358; iv. 1824, 272.—*Less.* Tr. Orn. 1831, 373 (= Wils.).—*Hartl.* Naum. ii. 1852, 52 (Cuba [???]).

Pie-grieche de la Louisiane, *Briss.* Orn. ii. 1760, 162, n. 8, pl. 15, n. 2.

Louisiane Shrike, *Lath.* Syn. i. pt. i. 1781, 162, n. 5 (based on Briss. & Linn.; exc. the ref. to PE. 397).

Pie-grièche ardoisée, *V.* l. c.

Pie-grièche de la Louisiane, *Le Moine*, Ois. Canad. 1861, 224.

Loggerhead Shrike, Loggerhead, Southern Shrike, Louisiana Shrike, Carolina Shrike, *Authors.*

b. excubitorides

Lanius carolinensis, *Sw.* Philos. Mag. i. 1827, 368 (Mexico).—*Licht.* "Preis-Verz. Mex. Vög. 1830, 2"; J. f. O. 1863, 58 (Mexico).—*Sw.* Isis, 1834, 784.

Lanius excubitorides, *Sw. & Rich.* FBA. ii. 1831, 115, pl. 34.—*? Tomes*, Zool. viii. 1850, 2734 (England).—*Cass.* Pr. Phila. Acad. 1857, 213 (monographic).—*Scl.* PZS. 1857, 126 (California).

Lanius excubitroides, *Peab.* Rep. Orn. Mass. 1839, 292 (Boston, in winter, *fide* Nuttall).

Lanius excubitoroides, *Bd.* Rep. Great Salt Lake, 1852, 328.—*Woodh.* Rep. Zuñi & Colo. R. 1853, 77.—*Hoy*, Pr. Phila. Acad. 1853, 308 (Wisconsin).—*Haym.* Pr. Phila. Acad. 1856. 290 (Indiana).—*Scl.* PZS. 1864, 173 (City of Mexico).—*Coop.* Am. Nat. iii. 1869, 476.—*Allen*, Am. Nat. iii. 1869, 579.

Collyrio excubitoroides, *Bd.* BNA. 1858, 527; ed. of 1860, pl. 75, f. 2.—*Kenn.* PRRR. x. 1859, 25.—*Xant.* Pr. Phila. Acad. 1859, 191 (California).—*Bd.* Ives's Rep. Colo. R. 1861, pt. v. 5.—*Hayd.* Tr. Amer. Philos. Soc. xii. 1862, 162.—*Blakist.* Ibis, iv. 1862, 5; 1863, 66 (Saskatchewan).—*Coues*, Ibis, 1865, 164 (Arizona).—*Coues*, Pr. Phila. Acad. 1866, 73 (Fort Whipple, Ariz.).—*McIlwr.* Pr. Ess. Inst. v. 1866, 87 (Canada West).—*Butch.* Pr. Phila. Acad. 1868, 149 (Texas).—*Coop.* Am. Nat. iii. 1869, 34, 295.—*Coop.* Pr. Cal. Acad. 1870, 75.—*Stev.* Ann. Rep. U. S. Geol. Surv. for 1870, 1871, 464.

Collurio excubitoroides, *Bd.* Rev. AB. 1866, 445.—*Ocues*, Pr. Ess. Inst. v. 1868, 277 (New England, on other authority).—*Allen*, Mem. Bost. Soc. i. 1868, 504, 517.—*Sumich.* Mem. Bost. Soc. i. 1869, 548 (Vera Cruz).—*Coop.* B. Cal. i. 1870, 138.—*Aiken*, Pr. Bost. Soc. xv. 1872, 198 (Colorado).—*Merr.* Ann. Rep. U. S. Geol. Surv. Terr. for 1872, 1873. 677, 714.—*Ridgw.* Am. Nat. vii. 1873, 609.—*Trippe*, Am. Nat. vii. 1873, 497.

Lanius ludovicianus, *Bp.* PZS. 1837, 112 (Mexico).—*Ornith. Comm.* Journ. Phila. Acad. vii. 1837, 193 ("Columbia River").—*Towns.* Journ. Phila. Acad. viii. 1839, 152 (same).—*? Vigors*, Zool. Voy. Blossom, 1839, 17.—*Gamb.* Journ. Phila. Acad. i. 1847, 44 (California).—*Gamb.* Pr. Phila. Acad. 1847, 200 (California).—*? Woodh.* Rep. Zuñi & Colo. R. 1853, 76.—*Hoy*, Pr. Phila. Acad. 1853, 308 (Wisconsin).—*Henry*, Pr. Phila. Acad. 1855, 312 (New Mexico).—*Maxim.* J. f. O. 1858, 191 (Missouri River).—*Hoy*, Smiths. Rep. for 1864, 1865, 437 (Missouri).—*Minot*, BNE. 1877, 105 (north to Massachusetts).

Collyrio ludovicianus, *Henry*, Pr. Phila. Acad. 1859, 106 (New Mexico).—*Dress.* Ibis, 1865, 480 (San Antonio, Tex.).—*Trippe*, Pr. Bost. Soc. xv. 1873, 235.

Collurio ludovicianus, *Allen*, Mem. Bost. Soc. i. 1868, 499.—*Allen*, Am. Nat. 1869, 579 (New York and Canadian examples).—*Allen*, Bull. MCZ. iii. 1872, 176 (Kansas, Colorado, and Utah).—*Purdie*, Am. Nat. vii. 1873, 115 (Massachusetts).

Collurio ludovicianus *var.* **excubitoroides,** *Coues*, Key, 1872, 125.—*Ridgw.* Bull. Ess. Inst. v. 1873, 181 (Colorado).—*Coues*, BNW. 1874, 102.—*Allen*, Pr. Bost. Soc. xvii. 1874, 54 (Dakota).—*B. B. & R.* NAB. i. 1874, 421, pl. 19, f. 3.—*Yarr. & Hensh.* Rep. Orn. Specs. 1874, 13.—*Hensh.* ibid. 43, 60, 78, 107.—*Hensh.* List B. Ariz. 1875, 157.—*Hensh.* Zool. Expl. W. 100 Merid. 1875, 233.—*Nels.* Pr. Bost. Soc. xvii. 1875, 340, 346, 353 (Nevada and Utah).—*Lawr.* Bull. Nat. Mus. n. 4, 1876, 18 (Tehuantepec).—*Purdie*, Bull. Nutt. Club, ii. 1877, 21 (Rhode Island).

Collurio ludovicianus *β*, **excubitoroides,** *Ridgw.* Rep. Surv. 40th Par. iv. pt. iii. 1877, 453.

? Lanius mexicanus, *C. L. Brehm*, J. f. O. 1854, 145, 148.—*Scl.* PZS. 1859, 375 (Oaxaca).—(See *Scl.* PZS. 1864, 173.)

American Grey Shrike, *Sw.* l. c.

White-rumped Shrike, *Authors.*

HAB.—Of *ludovicianus* proper, chiefly the South Atlantic and Gulf States, from Carolina to Florida and Mississippi; but also extending north into the Valley of the Connecticut River, and west to that of the Ohio and the Mississippi. Of *excubitorides*, the rest of the United States, excepting most of New England; northeast to Canada, north in other British provinces to 54° N. at least, and south into Mexico.

CH. SP.— ♂ ♀ *Plumbeo-canus, infrà albus; fronte et fasciâ latâ per latus capitis ductâ, oculum amplectante, cum alis caudâque, nigris, his albo notatis; scapularibus et tectricibus caudalibus superioribus albis.*

♂ ♀, adult: Leaden-gray or light slate color, whitening on the scapulars and upper tail-coverts. Beneath white, slightly shaded with the French gray on the sides, but without dusky vermiculation. A narrow stripe across the forehead, continuous with a broad bar along the side of the head, embracing the eye, black, slightly, if at all, bordered with whitish. Lower eyelid not white. Wings and tail black, with white markings, much as in the last species. Bill and feet plumbeous-black; length usually under 9 inches; extent, 12–13; wing and tail each about 4; bill, ¾; tarsus, 1 or more.

Young: Vermiculated below with dusky, upon a brownish ground, about to the same extent as is seen in very old examples of *C. borealis*. General tone of the upper parts less pure than in the adult; scapulars and tail-coverts not purely white; black bar of head less firm, but as far as it goes maintaining the characters of the species. At a very early age, the upper parts, including the whitish of the scapulars and tail-coverts, is finely vermiculated with dusky waves. The ends of the quills, wing-coverts, and tail-feathers often have rusty or rufous markings.

There will be no difficulty whatever in distinguishing this species from the preceding by the foregoing description. Only the young birds are vermiculated below like *C. borealis*. The species shades directly into the particular form of the South Atlantic States (*ludovicianus*), which is darker and otherwise somewhat peculiar on an average.

DURING the greater part of the year, and in nearly all portions of the United States, the smaller species of Shrike replaces the Northern Butcher-bird. The true Loggerhead has been supposed to be confined to the South Atlantic and Gulf States, and the White-rumped variety to range over the rest of the country, especially the West; but I have gradually become satisfied that no such trenchant line can be drawn between the supposed habitats of the two varieties. With every desire to be precise in this matter, we need not be "holier than the Pope", nor attempt to establish distinctions that have no actual existence in Nature. It is certain that the two alleged species grade into each other by insensible degrees; and the same is true of the geographical areas they respectively inhabit. I am not aware that anything but typical *ludovicianus*—by which I mean the extreme of small size and dark color, little, if any, relieved by hoariness—occurs in the South Atlantic and Gulf States; but "ludovicianus" has been quoted from such remote quarters as New England, Oregon, and Mexico, and I have examined different specimens from Ohio,

which were certainly referable to both species, if our technical characters are to be relied upon in the least.

The real Loggerheads, such as Wilson, Audubon, and Bachman talk about, are developed to the highest degree in the South Atlantic States. I found them common in South Carolina, and others attest their occurrence along the whole of the same seaboard, where they seem to be specially numerous. But they are not confined to this area; for, as just stated, they occur in the Mississippi Valley and in New England, if not also in the still more distant countries to which they have been accredited by some writers.

The New England record is specially interesting. It has long been asserted that a Shrike, not *L. borealis*, occurs occasionally in this quarter; but we have only recently acquired satisfactory evidence that such is the case. *L. excubitorides* was originally given as a New England bird by Emmons and Peabody, apparently upon the authority of Nuttall, who stated it to be a species "which in winter is seen in the vicinity of Boston" (Man. ii. 564). But this seemed so hypothetical that I retained the species in my New England List of 1868 as one "of very doubtful occurrence, though known in New York and Canada West". Putnam's citation of "C. ludovicianus" rests upon no more sufficient evidence, as it refers in fact to the same authorities, and Linsley's "Lanius carolinensis" is in no better plight. Dr. Brewer was therefore right in excluding *excubitorides* from his category of observed inhabitants of New England, until its occurrence there should be established by positive proof. The required evidence has lately been furnished by Mr. H. A. Purdie, who states (Bull. Nutt. Club, ii. 1877, 21) that "a typical example of this variety was shot by Mr. Jencks in Cranston, R. I., September 2, 1873, and is now in his collection."

So far as I am acquainted with the record, the occurrence of any other Shrike than *L. borealis* in New England was first established in 1873 by Mr. H. A. Purdie (Am. Nat. vii. 115), who speaks of a specimen, considered to be a true Loggerhead, procured in West Newton, Mass., October 21, 1872. This occurrence authorized Dr. Brewer to include *ludovicianus* in his list, as he did, with the remark "accidental, (Mass.)" The next New England specimen, referred to the same variety, was also taken in Massachusetts, at Newtonville, in 1874, as recorded by Mr. C. J. Maynard (Amer. Sportsm. v. Feb. 13, 1875, p. 313). A

third was shot by Mr. W. W. Coe near Portland, Conn., in November of 1876, as Mr. C. H. Merriam informs us in his admirable treatise on the birds of Connecticut. Mr. Merriam also refers to another individual seen near New Haven in May, 1873, and which "might have been this species". In his late List of the birds of Massachusetts, by far the most authoritative we possess, Mr. J. A. Allen speaks of still another individual there first recorded, which was taken in Lynn, in November, 1877, by Mr. N. Vickary. This is the sum of the New England record, so far as I am acquainted with it, and it warrants the inference that the Loggerhead frequently pushes northward into the Valley of the Connecticut River, though it does not appear to have been noted at intermediate points thence to its well-known Southern home. It is neither in Lawrence's nor in Turnbull's list, nor did I ever meet with it about Washington.

Both varieties, as I have said, occur in the Western States east of the Mississippi with regularity and frequency, and the White-rumped form pushes eastward into New York and Canada. The northern limit of the latter is stated by Swainson and Richardson to be the 54th parallel. I have myself found it breeding in Dakota at 49°. It is said to occur in the region of the Saskatchewan, where, however, I did not see it; and it is very generally distributed in suitable places throughout the West, extending even into Mexico, whence we have sundry advices of its presence. Like its Northern congener, it is an imperfectly migratory bird; a movement occurs each season with some individuals, while others do not remove; so that Shrikes of this variety may be found over the whole area they inhabit at any season of the year, unless it be along the northern border of their range. They appear to be most numerous in intermediate regions, decreasing in numbers as we proceed either way. The local records we possess for various parts of the West are numerous and explicit, but scarcely require to be set forth in detail upon the present page.

BIBLIOGRAPHICAL APPENDIX

LIST OF FAUNAL PUBLICATIONS RELATING TO NORTH AMERICAN ORNITHOLOGY

A certain portion of my Bibliography of Ornithology has advanced so far toward completion that it becomes available in its present state for all practical purposes. It is accordingly published in advance of the whole work, as an appropriate and desirable Appendix to the present treatise on North American Ornithology. The plan and scope of this piece of bibliography should be stated explicitly, in order that those who wish to use it may know exactly what it does, and what it does not, contain.

It consists of the packet of titles representing the North American section of the "Faunal Publications" series, including titles and digests of works and papers relating solely to Birds of North America indiscriminately, collectively, or in general. In short, the titles are those that relate to the Birds of North America *as such*—not as components of any genus or family. Hence are excluded, for example, all such titles as "A Monograph of the *Tringeæ* of North America", which might seem to belong here; for such a title comes, in the "Systematic" portion of my Bibliography, under *Scolopacidæ*. All general treatises on the birds of larger geographical areas, even if including North America (like Sclater's "Catalogue of American Birds" for example), are excluded, as are also all general works on ornithology. By this means, the scope of the present article is conveniently narrowed and rendered perfectly definite; and only in a few instances, for one or another particular reason, is the rigidity of the rule of exclusion relaxed.

The bulk of the titles of course consists of "local lists" and allied kinds of articles. As a "faunal publication" may relate to any geographical area, from that of North America itself to that of a single locality, the titles embrace a range of publications from the works of Wilson or Audubon down to the

least note on the subject; and with them are also given, as separate titles, the reviews and notices which appertain. As already hinted, I give the benefit of the doubt to a few titles whose claim to a place here is doubtful, or which are of such mixed character that arbitrary decision is required; for it is well understood that a perfect classification of titles by subject-matter is a bibliographical impossibility.

For present purposes, "North America" is held to include Greenland, Mexico, and the Bahamas and Bermudas; but neither the West Indies nor America south of Mexico.

The titles herewith presented, nearly or about one thousand in number, are simply those which I have thus far compiled for my Universal Bibliography of Ornithology; but they are supposed to be about 95 per cent. of all that are extant on this particular subject, and to represent some three or four per cent. of the whole literature of ornithology. The whole number of titles I have in hand at present writing is believed to be about 18,000. The present set of titles is arranged chronologically, with secondary alphabetization under each date. This method, I am persuaded, tends to the best exhibit of the subject in its natural connections and bearings, because the movement of the bibliography corresponds with the progress of the science; and any objections to such an arrangement are removed by the two indexes, of authors and of localities, by which any desired title may be found at once.

There is little to be said of the way in which the work has been done; for if it cannot speak for itself, the less said the better. It should be stated, however, that the compiler has habitually regarded THE TITLE as a thing no more to be mutilated than a man's name; and that he has taken the utmost pains to secure transcription of titles *verbatim, literatim et punctuatim.* It may be added, that, excepting in certain specified cases, *no title in this Bibliography has been taken at second-hand.*

The remarks which follow most of the titles have been made at the compiler's discretion, and are of the most miscellaneous description. In general, however, they are in amplification or explanation of the title, rather than in the way of criticism. They are in general brief, and more so than might be expected in a case like the present; but it will be remembered that they form part of a commentary on many thousand titles, no one set of which is given preference—such extensive commentary demanding of course the utmost condensation.

Bibliography is never finished, and always more or less defective, even on ground long gone over. It is earnestly hoped that the errors and omissions of this piece of work may be brought by those interested to the compiler's notice. In fact, one object in printing the present batch of titles is to invite criticism, to the end that the final Bibliography may be bettered. The writer would be accurate; yet he feels the weight of Stevens's satire: "If you are troubled with a pride of accuracy, and would have it completely taken out of you, print a catalogue."

With few exceptions, the books and papers here cited are in the Library of Congress at Washington. It is a pleasure to add, that I have enjoyed every possible facility of handling them, through the courteous attentions of Mr. A. R. Spofford.

In the course of the preparation of the whole Bibliography, the compiler has had, at different times, the assistance of Mr. S. W. Keen of Washington, Mr. Ernest Ingersoll of New York, and Dr. W. J. Hoffman of Reading, Pa., to each of whom he returns thanks for faithful service. During the printing of the present collection of titles, he has enjoyed the kind and valuable attentions of Mr. J. A. Allen, and has had the benefit of revision by a finished proof-reader, Mr. William Young of the Government Printing Office.

1612. SMITH, J. A Map of Virginia. | VVith a Descripti- | on of the Covntrey, the | Commodities, People, Govern- | ment and Religion. | VVritten by Captaine Smith, sometimes Go- | vernour of the Covntrey. | Wherevnto is annexed the | . . . . [etc., 14 lines]. | By VV[illiam]. S[trachey]. | [Design.] | At Oxford, | Printed by Joseph Barnes. 1612. Sm. 4to in shape and by printer's sigs., sq. 16mo size. 4 p. ll., pp. 1–39, map of Virginia, 2 ll. (second title and "To the reader"), pp. 1–110.

"Birds": a paragraph beginning on p. 14 and ending on p. 15.

1615. HAMOR, R. A trve | Discovrse of the | present Estate of Vir- | ginia, and the successe of the affaires | there till the 18 of Iune. 1614. | Together | With a Relation of the | seuerall English Townes and forts, the assu- | red hopes of that countrie and the peace | concluded with the Indians. | The Christening of Powhatans daughter | and her mariage with an English-man. | Writtn by Raphe Hamor the yon- | ger, late Secretarie in that Colony. | Alget, qui non ardet. | [Arms.] | Printed at London by Iohn Beale for Wil- | liam Welby dwelling at the signe of the | Swanne in Pauls Church-yard. 1615. 1 vol. 4to in shape and sigs., 16mo size. 4 p. ll. (title and "Epistle"), pp. 1–69 + 1.

Paragraph on "Foule of diuers sorts", p. 21.

1620. WHITBOURNE, R. A | Discovrse | and Discovery | of Nevv-fovnd-land, with | many reasons to prooue how worthy and be- | neficiall a Plantation may there be made, | after a far better manner than | now it is. | Together with the lay- | ing open of certain enor- | mities and abuses committed by some that trade | to that countrey, and the meanes laide | downe for reformation | thereof. | Written by Captaine Richard Whitbourne of | Exmouth, in the County of Deuon, and pub- | lished by Authority. | [Design.] | Imprinted at London by Felix Kyngston, for | William Barret, 1620. 1 vol. sm. 4to. 9 p. ll. (title, arms on reverse 1 l., "To his Majesty" 2 ll., "To his Majesty's subjects" 2 ll., "Preface" 4 ll.), pp. 1–69, one blank page, + 4 pp.

I have handled another ed., 1622; there is another, 1623. In both the two first, on pp. 8, 9, are noticed "Land-fowle" and "Water-fowle", among the latter being a notice of *Alca impennis*:—"These Penguins are as bigge as Geese, and flye not, for they haue but a little short wing, and they multiply so infinitely vpon a certaine flat Iland, that men driue them from thence upon a boord, into their boates by hundreds at a time."

1622. WHITBOURNE, R. A Discourse and Discovery of Newfoundland, [etc.] London, 1622.

See the orig. ed., 1620.

1624. SMITH, J. The | Generall Historie | of | Virginia, | New-England, and the Summer | Isles: with the names of the Adventurers, | Planters, and Governours from their | first beginning An°: 1584. to this present 1624. | With the Procedings of those Severall Colonies | and the Accidents that befell them in all their | Journyes and Discoveries. | Also the Maps and Descriptions of all those | Countryes, their Commodities, people, | Government, Customes, and Religion | yet knowne. | Divided into sixe Bookes. | By Captain Iohn Smith | Sometymes Governour | in those Countryes & Admirall | of New England. | London. | Printed by I. D. and | I. H. for Michael | Sparkes. | 1624. 1 vol. folio. Eng. title, 6 p. ll., pp. 1–96, 105–248, 4 maps.

For the bird-matter, see the ed. of 1632.

1628. HERNANDEZ, F. Rerum Medicarum Novæ Hispaniæ Thesaurus, seu Plantarum Animalium Mineralium Mexicanorum historia ex Francisci Hernandi Noui orbis medici Primarij relationibus in ipsa Mexicana vrbe conscriptis à Nardo Antonio Recchо. . . . Collecta ac in ordinem digesta à Joanne Terrentio Lynceo notis illustrata; cum Indice, et Historiæ Animalium et Mineralium libro. Nunc primum in naturaliū rerū studiosor. gratiā et utilitatē studio et impensis Lynceorum Publici iuris facta Philippo magno dicata. Romæ. M. DC. XXVIII Ex Typographeio Jacobi Mascardi. Folio. Engraved title, pp. 950, 17 ll.; "Historiæ Animalium", pp. 90, (6).

Not seen—title from Sabin's *Dict.*, where it is said:—"This edition was abridged, and edited from the author's MS. by Dr. Recchо of Naples; pp. 345–455 are additions by Terrentius de Constance, pp. 460–840 by John Faber, pp. 841–899 are annotations by Fabio Colonno, the tables by Prince Cesi." Sabin describes another ed., sm. 4to, Mexico, 1615, which he says is probably the work referred to by Henry Stevens's *Bibliotheca Historica*, No. 891, where the date is said to be 1604.—The "Historiæ Animalium", etc., forming the latter 90 + 6 pp. of the whole, separately paged, is sometimes cited as a separate work, and even attributed to "Fernandez", as if to a different author from Hernandez. See the ed. fully collated beyond, 1651.

1630. [HIGGINSON, FRANCIS.] New England's | Plantation. Or, | a Short and trve | description of the commodities | and discommodities of that Countrey. | — | Written by a reuerend Diuine now | there resident. | — | [Seal.] | — | London, Printed by T. C. and R. C. for Michael Sparke, | dwelling at the Signe of the Blew Bible in | Greene Arbor in the little Old Bailey. 1630. 1 vol. 4to in shape and by sigs., sq. 16mo size, consisting of 11 unpaged leaves.

On the 7th leaf begins, "Of the Aire of New England with the Temper of the Creatures in it"; and on the next leaf comes some bird-matter, amounting to just one page.—Reprinted in *Force's Historical Tracts*, vol. i, Tract 12.

1632. MORTON, T. New English Canaan; Or New Canaan, containing An Abstract of New England. Composed in three Bookes, [etc.] Written by Thomas Morton, of Cliffords Inn, Gent. Upon ten Yeers Knowledge and Experiment of the Country. Printed by Charles Green. 1632.

Not seen.—Reprinted in *Force's Hist. Tracts*, vol. ii, Tract 5, 1838.—See ed. of 1637.

1632. SAGARD THEODAT, G. Le Grand Voyage | Dv pays des Hvrons, | situé en l'Amerique vers la Mer | douce, és derniers confins | de la nouuelle France, | dite Canada. | Où il est amplement traité de tout ce qui est du pays, des | mœurs & du naturel des Sauuages, de leur gouuernement | & façons de faire, tant dedans leurs pays, qu'allans en voya- | ges: De leur foy & croyance; De leurs conseils & guerres, & | de quel genre de tourmens ils font mourir leurs prisonniers. | Comme ils se marient & esteuent leurs enfans: De leurs Me- | decins, & des remedes dont ils vsent à leurs maladies: | De leurs dances & chansons: De la chasse, de la pesche & des | oyseaux & animaux terrestres & aquatiques qu'ils ont. Des | richesses du pays: Comme ils cultiuent les terres, & accom- | modent leur Menestre. De leur deüil, pleurs & lamenta- | tions, & comme ils enseuelissent & enterrent leurs morts. | Auec vn Dictionnaire de la langue Huronne, pour la commodi- | té de ceux qui ont à voyager dans le pays, & n'ont | l'intelligence d'icelle langue. | Par F. Gabriel Sagard Theodat, Recollet de | S. François, de la Prouince de S. Denys en France. | — | A Paris, | Chez Denys Moreav, ruë S. Iacques, à | la Salamandre d'Argent. | — | M. DC. XXXII. | Auec Priuilege du Roy. 1 vol. 16mo, with 12 prel. ll. (eng. title (1 l.), plain title (1 l.), invocation to Jesus Christ (2 ll.), to Henry de Lorraine (2 ll.), to reader (3 ll.), contents and royal privilege, &c. (3 ll.)), and pp. 1–380, whereof pp. 295–380 are of Part Second.—Dictionary of the Huron language, pp. 1–12, 1–132 (being 66 leaves, unpaged), 1–13 (being 7 leaves, unpaged).

Seconde Partie, Chapitre I, pp. 296–304, Des Oyseaux.—There is a copy of this extremely rare work in the Congressional Library at Washington. There is a late textual reprint, 1865, giving facsimile of the original title-pages, indication of the original pagination, etc., *q. v.* The work is not to be confounded with the same author's History of Canada, 1636, of which there is a similar late reprint.

1632. SMITH, J. The | General Historie | of | Virginia, . . . [etc.] | London. | Printed by I. D. and | I. H. for Edward Blackmore | Anno 1632.

Excepting date and imprint, this is *identical* with the orig. ed., 1624, *q. v.*, even to the break in the pagination between pp. 96 and 105; also same 4 maps.

1632. SMITH, J.—Continued.

Book 2, Of Virginia, paragraph on Birds at p. 27.—Book 5, Of the Bermudas, 2 paragraphs on Birds at p. 171, describing, among others, the "Cahow" (see *Jones's Nat. in Bermuda*, 1859, p. —) and Tropicke-bird.—Book 6, Of New England, paragraph on Birds at p. 216.

1634. WOOD, W. New Englands Prospect. A true, lively, and experimentall description of that part of America, commonly called Nevv England: discovering the state of that Countrie, both as it stands to our new-come English Planters; and to the old Native Inhabitants. Laying downe that which may both enrich the knowledge of the mind-travelling Reader, or benefit the future Voyager. By William Wood. Printed at London by Tho. Cotes, for Iohn Bellamie, and are to be sold at his shop, at the three Golden Lyons in Corne-hill, neere the Royall Exchange. 1634. Sm. 4to. pp. 112.

Not seen.—Title taken as found in Young's Chronicles (8vo, Boston, 1846). The treatise is said to contain, Chap. VIII, a considerable and curious account of New England birds.

1635. WOOD, W. Nevv | Englands | Prospect. | A true, lively, and experimen- | tall description of that part of America, | commonly called Nevv England: | discovering the state of that Coun- | trie, both as it stands to our new-come | English Planters; and to the old | Native Inhabitants. | Laying downe that which may both enrich the | knowledge of the mind-travelling Reader, | or benefit the future Voyager. | — | By William Wood. | — | [Design.] | Printed at London by Tho. Cotes, for Iohn Bellamie, and are to be sold | at his shop, at the three Golden Lyons in Corne-hill, neere the | Royall Exchange. 1635. 1 vol. 4to in shape and in sigs., about 16mo size. 4 p. ll., pp. 1–83 + 5, map.

Stevens's *Bibl. Amer.* gives two other eds., of 1634 and 1639; they appear to be very similar, but not identical. Copy of the present ed. in Congr. Libr.

Chap. VIII, pp. 22–27, "Of the Birds and Fowle both of Land and Water", both in prose and verse. Numerous species are cursorily treated.

1636. SAGARD THEODAT, G. Histoire | du Canada | et Voyages | que les freres mineurs recollects y ont faicts pour | la conuersion des infidelles | divisez en quatre liures | Où est amplement traicté des choses principales arriuées | dans le pays depuis l'an 1615 iusques à la prise qui en | a este faicte par les Anglois.—Des biens & commoditez | qu'on en peut esperer.—Des moeurs, ceremonies, crean- | ce, loix & coustumes merueilleuses de ses inhabitans.— | De la conuersion & baptesme de plusieurs, & des moyens | necessaires pour les amener à la cognoissance de Dieu. | L'entretien ordinaire de nos Mariniers, & autres parti- | cularitez que se remarquent en la suite de l'histoire. | Fait et composé par le | F. Gabriel Sagard Theodat, | Mineur Recollect de la Prouince | de Paris. | A Paris | Chez Claude Sonnius, ruë S. Jacques à l'Escu de | Basle & au Compas d'or. | M. DC. XXXVI | Auec Priuilege & Approbation.

This is the title of the orig. ed., very rare; there is a textual reprint, indicating pagination of the original, 4 vols. 12mo, Paris, 1866, *q. v.*—"Des oyseaux plus communs du Canada," Chap. II, pp. 732–741; a brief notice of a few leading species, as the Hummingbird, Jay, Eagle, Crane.

1637. MORTON, T. New English Canaan | or | New Canaan. | Containing an Abstract of New England, | Composed in three Bookes. | The first Booke setting forth the originall of the Natives, their | Manners and Customes, together with their tractable Nature and Love towards the English. | The second Booke setting forth the naturall endowments of the | Country, and what staple Commodities it | yealdeth. | The third Booke setting forth, what people are planted there, | their prosperity, what remarkable accidents have happened since the first | planting of it, together with their Tenents and practise of their Church. | Written by Thomas Morton, of Cliffords Inne gent, upon tenne | yeares knowledge and experiment of the | Country. | Printed at Amsterdam, | By Jacob Frederick Stam. | In the yeare 1637. 1 vol. very small 4to by printer's sig., nearer 16mo size. pp. 1–188, + 2 ll. ("contents).

Copy in Congr. Libr., but title-page gone; above title copied from Stevens's *Bibl. Amer.* This is a 2d ed., orig. 1632.

The second Booke, Chap. IV, pp. 67–73, "Of Birds, and fethered fovvles," Swannes, Geese, Ducks, Teales, Widggens, Simpes (=Snipes) Sanderlings, Cranes, Turkies, Pheisants, Partridges, Quailes, Owles, Crowes, a Lannaret, Fawcons, Goshawkes, Martins, Sparhawkes, A hunning bird, "as small as a Beetle," etc.

1649. [UNKNOWN.] Perfect Description of Virginia, [etc.] Pamph. 4to. 1649.

Not seen.—Said to end with a catalogue of "Beasts, Birds, Fish, and Trees".

1651. HERNANDEZ, F. Rervm Medicarvm | Novæ Hispaniæ | Thesavrvs | sev | Plantarvm Animalivm | Mineralivm Mexicanorvm | Historia | ex Francisci Hernandez | Noui Orbis Medici Primarij relationibus | in ipsa Mexicana Vrbe conscriptis | a Nardo Antonio Recchо | Monte Coruinate Cath. Maiest. Medico | Et Neap. Regni Archiatro Generali | Iussu Philippi II. Hisp. Ind. etc. Regis | Collecta ac in ordinem digesta | A Ioanne Terrentio Lynceo | Constantiense Germº. Phō. ac Medico | Notis Illustrata | Nunc primū in Naturaliū rer. Studiosor. gratiā | lucubrationibus Lynceorū publici iuris facta. | Quibus Jam excussis accessere demum alia | quor. omnium Synopsis sequenti pagina ponitur | Opus duobus voluminibus diuisum | Philippo IIII. Regi Catholico Magno | Hispaniar. vtriusq. Siciliæ et Indiarū etc Monarchæ | dicatum. | Cum Priuilegijs. | Romæ Superior. permissu. Ex Typographeio Vitalis Mascardi. M. DC. XXXXXI. [*Or,*]

Nova | Plantarvm, Animalivm | et Mineralivm Mexicanorvm | Historia | a Francisco Hernandez Medico | In Indijs præstantissimo primum compilata, | dein a Nardo Antonio Recchо in volvmen digesta, | a Io. Terentio, Io. Fabro, et Fabio Colvmna Lynceis | Notis, & additionibus longe doctissimis illustrata. | Cui demum accessere | aliqvot ex principis Federici Cæsii Frontispiciis | Theatri Naturalis Phytosophicæ Tabulæ | Vna cum quamplurimis Iconibus, ad octingentas, quibus singula | contemplanda graphice exhibentur. | [Tabula.] | Romae MDCLI. | Sumptibus Blasij Deuersini, & Zanobij Masotti Bibliopolarum. | Typis Vitalis Mascardi. Superiorum permissu. 1 vol. folio. Eng. title (first, above given), back blank, illum. title (second, just given), back blank, dedication to the king,

1651. HERNANDEZ, F.—Continued.

1 l., printer to reader etc. 2 ll., "Index plantarvm" etc. 7 ll., "Index Authorvm" etc. 3 ll. (= total of 30 unpaged p. ll.), pp. 1–950 (main text), + 5 unpaged ll. (Indexes); with unnumbered illustrations in the text. [*Then follows*, separately paged,]

Historiæ Animalivm | et Mineralivm Novae Hispaniae | Liber Vnicus | in sex Tractatvs divisvs | Francisco Fernandez Philippi Secundi primario Medico | avthore. pp. 1–90, + 3 unpaged ll. (Indices and Errata).

Rervm medicarvm Novae Hispaniae Nardi Antonii Recchi Liber nonus. Animalia exhibet, pp. 313–334: Cap. vi, p. 317, De Ave paradisea, with a cut of a Bird of Paradise, from some old author. Cap. viii, p. 319, De Cozcaqvavhtli, Regina aurarum. Capp. ix–xi, pp. 320–322, various birds, with 7 cuts. Cap. xix, p. 331, De Tzopilotl, siue Aura, with cut.

Aliorum Novae Hispaniae Animalivm, Nardi Antonii Recchi imagines et nomina. Ioannis Fabri Lyncei . . . expositione, pp. 460–840; birds being treated at pp. 672–720.—Alcatraz, Onocrotalus Mexicanus dentatus, p. 672, cut; Onoc. Mex. non dentatus, p. 673, cut; scholia eiusdem to p. 685. Acitli, Mergus americanus, p. 686, cut; scholia eiusd. to p. 696. Picus americanus, p. 697, cut; scholia eiusdem to p. 704. Hoitzitziltototl, Auis picta americana, p. 705, cut; scholia eiusdem to p. 709. Avis mexicana Psittaci colore, p. 709, cut. Avis anonyma, Nouae Hispaniae, p. 710, cut; scholia eiusdem to p. 720.

Historiae Animalivm . . . Liber Vnicus . . . Francisco Fernandez . . . avthore, Tractatvs Secundvs, De Historiae Avivm Novae Hispaniae, pp. 13–58, Cap. i–ccxxix, treats of some 229 birds of Mexico, giving short descriptions, etc., of each.

This famous work is cited by bibliographers and naturalists in such uncertain ways, occasioning so much confusion, that I have thought best to give a reasonably full collation of the volume, and a complete exposition of the ornithological matter it contains. It will be observed that the volume has two very different titles for the same work, in the composition of which several authors are concerned; and that there are two very different works, separately paged, in the same volume. The copy examined is lettered on the cover "Recchi Hist. Mexici". The date, 1651, is that of a later ed., as I find the work cited as of 1628, *q. v.*

1672. JOSSELYN, J. New-Englands | Rarities | Discovered: | In | Birds, Beasts, Fishes, Serpents, | and Plants of that Country. | Together with | The Physical and Chyrurgical Reme- | dies wherewith the Natives con- | stantly used to Cure their Distem- | pers, Wounds, and Sores. | Also | A perfect Description of an Indian | Squa, in all her Bravery; with a | Poem not improperly conferr'd | upon her. | Lastly | A Chronological Table | of the most remarkable Passages in that | Country amongst the English. | — | Illustrated with Cuts. | — | By John Josselyn, Gent. | — | London, Printed for G. Widdowes at the | Green Dragon in St. Pauls Church yard, 1672.

The foregoing title is taken from what is supposed to be a facsimile of the original, in the *Archæologia Americana*, or *Trans. and Coll. Amer. Antiq. Soc.* vol. iv, where the literal reprint occupies pp. 133–238. The collation of the original is given by Field as "24° Frontispiece, a dragon. Title and dedication, each 1 leaf. Text pp. 1 to 114. Advertisement, 1 leaf."

Pages 6–13 treat "First, of Birds", giving an account, more curious than edifying, of a number of New England species, ending with "What Birds are not to be found in New England". The account is interlarded with fanciful recipes for curing diseases—and indeed the ornithology itself is not much less imaginary. Among other species are treated the "Troculus" (*Chætura*), "Pilhannaw", and the "Wobble". The last is interesting as attesting the then occurrence of *Alca impennis* in New England.

1674. JOSSELYN, J. An | Account | of two | Voyages | to | New-England | Wherein you have the setting out of a Ship, | with the charges; The prices of all necessaries for | furnishing a Planter and his Family at his first com- | ing, A Description of the Countrey, Natives and | Creatures, with their Merchantil and Pysical use; The Government of the Countrey as it is now pos- | sessed by the English, &c. | A large Chronological Ta- | ble of the most remarkable passages, from the first | discovering of the Continent of America, to the year 1673. | — | By John Josselyn Gent. | — | [Quotation.] | — | London, Printed for Giles Widdows, at the Green-Dragon | in St. Pauls-Church-yard. 1674. 1 vol. sm. 18mo, 8 leaves to a sig. 4 p. l. (license 1 l., title 1 l., to the President & Fellows of the Royal Soc. 1 l., to the Reader 1 l.), pp. 1–279 + 3 pp.

Birds at pp. 95–102. See the other ed., of 1675.

1675. JOSSELYN, J. An | Account | of two | Voyages | to New-England. | Wherein you have the setting out of a Ship, | With the charges; | The prices of all necessaries for | furnishing a Planter & his Family at his first com- | ing; A Description of the Country, Natives and | Creatures; The Government of the Countrey as | it is now possessed by the English, &c. A large | Chronological Table of the most remarkable | passages from the first discovering of the Conti- | nent of America, to the year 1673. | — | By John Josselyn Gent. | — | The Second Addition. | — | [Quotation, 6 lines.] | London Printed for G. Widdowes at the Green Dragon in St. | Pauls Churchyard, 1675.

Reprinted in *Collections of the Massachusetts Historical Society*, vol. iii, of the third series, 1833, pp. 211–396, whence the above title is taken, and where occurs this remark:—"In the 12mo. volume from which this is printed, the title is preceded by a leaf, on the first page of which is the printer's device, viz. a dragon with the letters G W over it; and in the middle of the second page is 'Licensed by Roger L'estrange *Novemb.* the 28, 1673.' The title-leaf (which is substituted for one cut out, doubtless to give the book the appearance of a second edition) is followed by two leaves, one bearing the Dedication, the other a list of Errata . . . ." See the orig. ed., 1674.

Bird-matter occurs at pp. 95–103 of the original (pp. 274–280 of this reprint), in the shape of some curious remarks of no earthly account (though I observe that some of Josselyn's commentators attempt to interpret him), opening thus:—"Of birds there are not many more than 120 kinds as our Naturalists have conjectured, but I think they are deceived; they are divided into land-birds and water-birds, the land birds again into birds of prey, birds for meat, singing-birds and others." A good many kinds of birds are gossiped about; *e. g.*, the Pilhannaw, "the biggest bird that is, except the Ostrich".

1675. JOSSELYN, J. New England's Rarities Discovered in Birds, Fishes, Serpents, and Plants of that Country. Together with the Physical and Chyrurgical Remedies, wherewith the Natives constantly use [etc.]. By John Josselyn, Gent. 2d Addition. London. 1675.

Not seen. See the orig. ed., 1672.

1676. GLOVER, T. An Account of Virginia, its Scituation, Temperature, Productions, Inhabitants, and their manner of planting and ordering Tobacco, &c. < *Philos. Trans.*, xi, 1676, pp. 623–636.

Page 631 notices "Turkies, Turkie Buzzards, Turtle-Doves, Partridges, Hawks of several sorts", and more particularly the Mocking-bird, Red-bird, and Humming-bird, of which latter it is stated that it is "not much bigger than a Hornet and yet hath all the parts of a bird entire".

1693. CLAYTON, J. Mr. John Clayton, Rector of Crofton at Wakefield, his Letter to the Royal Society, giving a farther Account of the Soil, and other Observables of Virginia. < *Philos. Trans.*, xvii, 1693, pp. 978–999.

Pages 988–999, "Of the Birds", consist of a running commentary on quite a large number of species, considering the early date.

1703. LA HONTAN, —, BARON DE. Voyages dans l'Amérique . . . . 2 vols. 12mo. La Haye. 1703.

The original, which I have not seen; see the English ed., 1703.

1703. LA HONTAN, —, BARON DE. New | Voyages | to North-America. | Containing | [etc. etc.]. | — | Illustrated with Twenty Three Mapps and Cutts. | — | Written in French | By the Baron Lahontan, Lord Lievtenant | of the French Colony at Placentia in New- | foundland, now in England. | — | Done into English. | — | In Two Volumes. | A great part of which never Printed in the Original. | — | London: Printed for H. Bonwicke in St. Paul's Churchyard; | T. Goodwin, M. Wotton, B. Tooke, in Fleetstreet; and S. Manship | in Cornhill, 1703. 2 vols. sm. 8vo. Vol. I, 12 prel. ll. (Title, Dedication, Preface, Contents), pp. 1–280, 12 maps and cuts.

At pp. 237–242 of vol. I occurs an annotated "List of the Fowl or Birds that frequent the South Countries of Canada"; a second List of the "Birds of the North Countries of Canada"; followed by "A Description of such Birds as are not accounted for in my Letters".

1709. LAWSON, J. A New | Voyage | to | Carolina; | Containing the | Exact Description and Natural History | of that | Country: | Together with the Present State thereof | and | A Journal | Of a | Thousand Miles Travel'd thro' several | Nations of Indians. | Giving a particular Account of their Customs, | Manners &c. | By John Lawson, Gent, Surveyor | -General of North Carolina. | London, | printed in the year 1709. [No publisher.] 1 vol. sm. 4to.

This is the orig. ed., issued in numbers as a part of *Stevens's Collection of Voyages*, 1709. The copy examined in the Congressional Library lacks the title-leaf and the map; otherwise the collation is: Dedication, 1 leaf; Preface, 1 leaf; Introduction and Journal, pp. 1–60; A Description of North Carolina, pp. 61–258; Advertisement, 1 leaf; Animal plate at p. 181. The size is sm. 4to by printer's sigs., or sq. 8vo. The bird-matter is at pp. 135–151. The work was reprinted, with new title, beginning "The History of Carolina", etc., but in other respects identical, 1714; another ed., precisely similar to the last, 1718; a 4th ed., Dublin, 1737, attributed to Brickell, *q. v.* The 5th and last ed. was issued at Raleigh in 1860, *q. v.* There is also a German version, „Beschreibung der Provinz Carolina" u. s. w., 8vo, Hamburg, 1712. "Neither of the first three editions of Lawson's work is often found complete, with the map, and animal plate." For the ornithology of this work, see what is said under heads of BRICKELL, 1737, and of the edition of 1860.

1714. LAWSON, J. The | History | of | Carolina; | containing the | Exact Description and Natural History | of that Country: | Together with the Present State thereof. | And | A Journal | of a Thousand Miles, Travel'd thro' several | Nations of Indians. | Giving a particular Account of their Customs, | Manners, &c. | — | By John Lawson, Gent. Surveyor General | of North-Carolina. | — | London: | Printed for W. Taylor at the Ship, and T. Baker at the Black- | Boy, in Pater-Noster-Row, 1714.

Identical in every respect, excepting the title, with the orig. ed., 1709, *q. v.* On actual comparison, this seems to be only other copies of the original, furnished with a new title-leaf.

1718. LAWSON, J. The | History | of | Carolina; | containing the | Exact Description and Natural History of that Country; | Together with the Present State thereof. | And A Journal | Of a Thousand Miles, Travel'd thro' several | Nations of Indians. | Giving a particular Account of their Customs, Manners, &c. | By John Lawson, Gent. Surveyor-General | of North-Carolina. | London, | printed for T. Warner, at the Black-Boy in Pater-Noster | Row, 1718. Price Bound Five Shillings.

Not seen—title from Field, who states that the collation is the same as that of the ed. of 1714 or 1709. Is it anything more than other copies?

1730. MORTIMER, [C.] An Account of Mr. Mark Catesby's Essay towards the Natural History of Carolina and the Bahama Islands, with some Extracts out of the first three Sets. < *Philos. Trans.*, xxxvi, 1730, pp. 425–434.

The commentary includes Catesby's birds, Nos. 1–60.

1731. MORTIMER, [C.] A Continuation of an Account of Mr. Mark Catesby's Essay towards a Natural History of Carolina and the Bahama Islands, with some Extracts out of the fourth Set. < *Philos. Trans.*, xxxvii, 1731, pp. 174–178.

The commentary proceeds with Nos. 61–80.

1731–48. CATESBY, M. The Natural History of Carolina, Florida, and the Bahama Islands: containing . . . . 2 vols. folio. London. Vol. I, 1731. Vol. II, 1743. 200 plates, and map. Appendix, 1748.

This is the *editio princeps*, which I have not seen. There is a 2d ed. by G. Edwards, 1754; a 3d ed. by the same, folio, 2 vols., London, 1771, with the appendix and Linnæan index, which see, *infrà*. See, also, *Philos. Trans.*, xxxvi, 1730, pp. 425–434; xxxvii, 1731, pp. 174–178; xxxvii, 1732, pp. 447–450; xxxviii, 1734, pp. 315–318; xxxix, 1735, pp. 112–117; xxxix, 1736, pp. 251–258; xl, 1738, pp. 343–350; xlv, 1748, pp. 157–173. *Seligmann's Sammlung*, 9 vols. 4to, Nürnberg, 1749–1776, reproduces Catesby, together with Edwards.

1732. MORTIMER, C. A Continuation of an Account of an Essay towards a Natural History of Carolina and the Bahama Islands, by Mark Catesby, F. R. S. with some Extracts out of the fifth Set. < *Philos. Trans.*, xxxvii, 1732, pp. 447–450.

Commentary continues with Nos. 81–100, concluding the birds of vol. I, the five next papers relating to vol. II, which has birds only in the Appendix.

1737. BRICKELL, J. The Natural | History | of | North Carolina. | With an | Account | of the | Trade, Manners, and Customs of the | Christian and Indian Inhabitants. Il- | lustrated with Copper-Plates, whereon are | curiously Engraved the Map of the Country, | several strange Beasts, Birds, Fishes, Snakes, | Insects, Trees, and Plants, &c. | — | By John Brickell, M. D. | — | Nostra nos in urbe peregrinamur. Cic. | Dublin. | Printed by James Carson, in Coghill's-Court, Dame- | street, opposite to the Castle-Market. For the Author, | 1737. 1 vol. 8vo. Title, reverse blank, pp. i–vii, 1–408, woodcuts, folding map, and 2 folding plates of animals.

"Of the Birds", pp. 171–213.—A cursory but detailed account, descriptive and general, of the species known to *Lawson*, several of which are figured on the plates above cited. This was at the time, as the alleged author claimed, "the most exact Account that is [was] yet known of the Birds that are [were] to be met with in North Carolina"; and it constitutes one of the most notable faunal lists of American birds of the last century, comparable to Bartram's on Florida Birds, Belknap's

1737. BRICKELL, J.—Continued.

on those of New Hampshire, etc. The names used are all vernacular. "The material for this work was stolen from Lawson with scarcely the disguise of change of form."

1741. EGEDE, H. Det gamle Grønlands | Nye | Perlustration, | Eller | Naturel-Historie, | Og | Beskrivelse over det gamle Grønlands Situation, | Loft, Temperament og Beskaffenhed ; | De gamle Norske Coloniers Begyndelse og Undergang der | Samme-Steds, de itzige Indbyggeres Oprindelse, Væsen, Leve-Maade og Handtæringer, samt Hvad ellers Landet | Yder og giver af sig, | saasom Dyer, Fiske og Fugle &c. med | hos føyet nyt Land-Caart og andre Kaaber-Stykker | over Landets Naturalier og Indbyggernis | Handtæringer, | Forfattet af Hans Egede, | Forhen Missionair udi Grønland. | — | Kjøbenhavn, 1741. | Trykt hos Johan Christoph Groth, hvende paa Ulfelds-platz. 1 vol. sm. 4to. 6 p. ll., pp. 1–131, + 1 l., map, and 11 pll.

This is the *editio princeps* of Egede's celebrated work on Greenland, though there are some earlier (1729 and 1730) essays leading up to it, and the titles of which begin similarly. There are very numerous editions, in various languages. An English ed. of 1745, *q. v.*, is fully cited below.—, Adskillig slags Søe Fugler", Cap. vi, pp. 51–55.

1744. CHARLEVOIX, F. X. DE. Histoire | et | Description generale de la Nouvelle France, | avec | le journal historique | d'un Voyage fait par l'ordre du Roi dans | l'Amérique Septtentrionnale. | Par le P. De Charlevoix, de la Compagnie de Jesus. | Tome premier [-troisième]. | [Vignette.] | A Paris, | Chez Nyon Fils, Libraire, Quai des Augustins, à l'Occasion. | — | M. DCC. XLIV. | Avec approbation et privilege du roi. 3 vols. 4to. Vol. I, 4 p. ll. (2 titles and dedication), pp. i–xxvj, 1–664, 9 maps. Vol. II, 2 p. ll., pp. i–xvj, 1–582, 1–56, 8 maps and 22 pll. (botanical). Vol. III, 2 p. ll., pp. i–xix, j–xiv, 1–543, 10 maps.

Vol. III, Des principales espèces des Oiseaux, qu'on voit en Canada, pp. 155 et suiv. Aigles, pp. 155, 207; Canards, p. 156; Chathuant, p. 155; Corbeaux, p. 155; Gruës, 156; Oiseaux Mouches, pp. 157, 158; Perdrix, p. 155; Perroquets, p. 384; Picverts, p. 156; Roitelets, p. 156.

1745. EGEDE, H. A | Description | of | Greenland. | Shewing | The Natural History, Situation, Boundaries, | and face of the Country; the Nature of the | Soil; the Rise and Progress of the old Nor- | wegian Colonies; the ancient and modern | Inhabitants; their Genius and Way of Life, | and Produce of the Soil; their Plants, Beasts, | Fishes, &c. | with | A new Map of Greenland. | And | Several Copper Plates representing different Animals, | Birds and Fishes, the Greenlanders Way of Hunting | and Fishing; their Habitations, Dress, Sports | and Diversions, &c. | — | By Mr. Hans Egede, Missionary in that Country for twenty five Years. | — | Translated from the Danish. | — | London: | Printed for C. Hitch in Paternoster Row; S. Austen in | Newgate-Street; and J. Jackson near St. James's Gate. | MDCCXLV. 1 vol. sm. 8vo. pp. xvi, + 2 ll., 220, with 12 copperpll.

Chap. V, pp. 59–65, "Of the Land Animals, and Land Fowls or Birds of Greenland; and how they hunt and kill them." Chap. VI, pp. 65–99, "Of the Greenland Sea Animals, and Sea Fowl and Fishes"; especially "Of Greenland Sea Birds", pp. 92–99.—See the orig. ed., 1741.

1746. ANDERSON, J. Herrn Johann Anderson, | I. V. D. | und weyland ersten Burgermeisters der freyen Kayserlichen | Reichstadt Hamburg, | Nachrichten | von Island, | Grönland und der Strasse Davis, | zum wahren Nutzen der Wissenschaften | und der Handlung. | Mit Kupfern, und einer nach den neuesten und in diesem Werke ange- | gedenen Entdeckungen, genau eingerichteten Landcharte. | Nebst einem Vorberichte | von den Lebensumständen des Herrn Verfassers. | [Vignette.] | Hamburg, | verlegts Georg Christian Grund, Buchdr. 1746. 1 vol. sm. 8vo, 8 leaves to a sig. Vignette facing title, title, reverse blank, 14 unpaged ll. ("Vorrede" and "Vorbericht"), pp. 1–328, 3 unpaged ll. ("Register"); map, and 4 pll., at pp. 43 (birds), 204, 224, 254.

The author's name may have been Andersen, but is printed Anderson in three different editions I have examined. There are numerous editions; besides the three I here give (see 1750 and 1756), there are these: German, Frankfurt u. Leipzig, 1747; Danish, Copenhagen, 1748; English, London, 1758, folio; and two or three French versions of later dates than 1750.—*See* CUV., *R. A.*, iii, 331; BÖHM., *Bibl.*, i, 769; AG. & STRICKL., *Bibl.*, i, 127.

Nachrichten von Island, Vögel, pp. 39–49, Taf. (Tauben, Snöriper [*Lagopus*], Adler, Habichte, Falken, Eulen, Raben, See-Meve, Gänse, Enten, Lumme, Geyervogel [*Alca impennis*] u. s. w.). Nachrichten von Grönland und der Straat Davis, Vögel, pp. 173–184 (Landvögel, Wasservögel; Beschreibung einer Mallemucke u. s. w.).

1748. ELLIS, H. A | Voyage | to | Hudson's-Bay, | by the | Dobbs Galley and California, | In the Years 1746 and 1747, | For Discovering a North West Passage; | with | An Accurate Survey of the Coast, and a short | Natural History of the Country. | Together with | A fair View of the Facts and Arguments from | which future finding of such a Passage is | rendered probable. | By Henry Ellis, Gent. | Agent for the Proprietors of said Expedition. | To which is prefixed, | An Historical Account of the Attempts hitherto made | for the finding a Passage that Way to the East-Indies. | Illustrated with proper Cuts, and a new and correct Chart | of Hudson's-Bay, with the Countries adjacent. | — | London: | Printed for H. Whitridge, at the Royal Exchange. | M. DCC. XLVIII. 1 vol. sm. 8vo. pp. xxviii, 336, map, and cuts.

There is also a German translation, Reise nach Hudsons Meerbusen, 8vo, Göttingen, 1750. —At pp. 36–41 are described a few species of birds—the Pelican, Heathcock, Horned Owl, and White-tailed Eagle being figured on two copperplates.

1748. MORTIMER, C. A Continuation of an Account of an Essay towards a Natural History of Carolina, and the Bahama Islands; by Mark Catesby, F. R. S. with some Extracts out of the Appendix. < *Philos. Trans.*, xlv, 1748, pp. 157–173.

This concludes Mortimer's Commentary on Catesby; it treats of the few birds given in the Appendix, vol. II.

1748. [SWAINE, CHARLES.] An | account | of a | Voyage | For the Discovery of a | North-West Passage | by | Hudson's Streights, | to the | Western and Southern Ocean | of | America. | Performed in the Year 1746 and 1747, in the Ship | California, Capt. Francis Smith, Commander. | By the Clerk of the California. | Adorned with Cuts and Maps. | Vol. I [II]. | London, Printed; | And Sold by Mr

1748. [SWAINE, CHARLES.]—Continued.
Jolliffe, in St. James's-street; Mr. Corbett, | in Fleet-street; and Mr. Clarke, under the Royal Exchange. | M. DCC. XLVIII. 2 vols. sm. 8vo. Vol. I, 1 p. l., pp. vii, 237. Vol. II, 1 p. l., pp. 326, + 9 ll. Maps and cuts in both vols.
Somewhat ornithological *passim*.

1750. ANDERSON, J. Histoire | Naturelle | de L'Islande, | du Groenland, | du Détroit de Davis, | Et d'autres Pays situés sous le Nord, | Traduite de l'Allemand | De M. Anderson, de l'Académie | Impériale, Bourg-mestre en Chef | de la Ville de Hambourg. | Par M * *, de l'Académie Impériale, & | de la Societé Royale de Londres. | Tome Premier [Second]. | [Device.] | A Paris, | Chez Sebastien Jorry, Imprimeur- | Libraire, Quai des Augustins, près | le Pont S. Michel, aux Cigognes. | — | M. DCC. L. | Avec Approbation & Privilége du Roi. 2 vols. 18mo. Vol. I, vignette facing title, pp. i–xl, map, pp. 1–314, folding pll. i, ii, opp. p. 84 (birds) and p. 188. Vol. II, 1 p. l. (title), pp. i–iv, 1–391, unnumbered pll. opp. pp. 54 (birds), 78, 108, 168, 220.
See the orig. ed., 1746; there are said to be later French eds., of 1754 and 1764. In the present French ed., the bird-matter of vol. I, relating to Iceland, is at pp. 77–97, with the same plate of the Hawk and Owl as in the original; in vol. II, the bird-matter of Greenland is at pp. 49–68, with a large folding plate of birds, which is not in the copy of the original edition examined.

1753–61. KALM, P. En | Resa | Til | Norra America, | På | Kongl. | Swenska Wetenskaps | Academiens befallning, | Och | Publici Kostnad, | Förrättad | Af Pehr Kalm, | Oeconomiæ Professor i Åbo, samt Ledamot af | Kongl. Swenska Wetenskaps-Academien. | Tom. I [–III]. | — | Med Kongl. Maj:ts Allernådigste Privilegio. | — | Stockholm, | Tryckt på Lars Salvii Kostnad 1753 [1756, 1761]. 3 vols. 16mo size, 8vo by sigs. Vol. I, 1753, 2 p. ll., pp. 1–484, + 10 ll., cuts in text. Vol. II, 1756, title, pp. 1–526, + 11 ll., cuts. Vol. III, 1761, title, pp. 1–538, + 7 ll., cuts, and folded pl. opp. p. 200.
This is the *editio princeps*. There are various other eds., *q. v.*, *infrà;* German, 1754–64; English, 1770–71, 1772, and 1812; Belgic, 2 v. 4to, Utrecht, 1772. "He published the account of his journey by intervals, for want of encouragement, and fearing the expences of publishing at once, in a country where few booksellers are found."

1754. CATESBY, M. The Natural History of Carolina, [etc.] 2 vols. folio. London, 1754.
Not seen. This is the 2d ed., by Edwards. See the orig. ed., 1731–48, and the 3d ed., 1771.

1754–64. KALM, P. Des Herren | Peter Kalms | Professors der Haushaltungskunst in Aobo, und Mitglie- | des der Königlichen schwedischen Akademie der | Wissenshaften | Beschreibung | der Reise | die er | nach dem | nördlichen Amerika | auf den Befehl gedachter Akademie | und öffentliche Kosten | unternommen hat, | der erste [–dritte] Theil. | Eine Uebersetzung. | — | Unter dem Königlichen Pohlnischen und Chur- | fürstl. Sächsischen allergnädigsten Privilegio. | — | Göttingen | im Verlage der Wittwe Abrams Vandenhoek, 1754 [1757, 1764]. 3 vols. 8vo. Vol. I, 1754, 10 prell. ll., pp. 1–568, Taf. i–v. Vol. II, 1757, 1 p. l., pp. 1–592, Taf. i, ii. Vol. III, 1764, 3 p. ll., pp. 1–648, Taf. i.

1754–64. KALM P.—Continued.

The vols. of this German translation severally appeared shortly after the successive publications of the original Swedish, 3 vols., 1753–1761. There is a Belgian version, 2 vols. 4to, 1772, and at least three English ones, by Forster, with his notes and additional plates (mammals and birds), 3 vols., London, 1770–1771, and 2 vols., London, 1772; also, 4to, 1812, in *Pinkerton's Voyages*, vol. xiii. See these. The present German version is said to be faithful and exact.

1756. ANDERSON, J. Beschryving | van | Ysland, | Groenland | en de Straat Davis. | Bevattende zo wel ene bestipte bepaling van de ligging en | grote van die Eilanden, als een volledige ontvouwing van hunne | inwendige gesteltenis, vuurbrakende Bergen, heete en war- | me Bronnen enz. een omstandig Bericht van de Vruchten | en Kruiden des Lands; van de wilde en tamme Landdie- | ren, Vogelen en Visschen, de Visvangst der Yslanders | en hunne onderscheide behandeling, toebereiding en | drogen der Visschen, voorts het getal der Inwoon- | ders, hunnen Aart, Levenswyze en Bezigheden, | Woningen, | Kledingen, Handteering, Arbeid, | Veehoedery, | Koophandel, Maten en Ge- | wichten, Huwelyks Plechtigheden, Opvoe- | ding hunner Kinderen, Godsdienst, Ker- | ken en Kerkenbestuur, Burgerlyke Rege- | ring, Wetten, Strafoeffeningen en wat | wyders tot de Kennis van een Land | vereischt word. | Door den Heer | Johan Anderson, | Doctor der Beide Rechten, en in Leven eerste Burgermeester | der vrye Keizerlyka Rykstad Hamburg. | Verrykt met Platen en een nieuwe naauwkeurige Landkaart der | ontdekkinge, waar van in dit Werk gesproken word. | Uit het Hoogduits vertaalt. | Door | J. D. J. | Waar by gevoegt zyn de Verbeteringen | Door den Heer Niels Horrebow, | Opgemaakt in zyn tweejarig verblyf op Ysland. | [Designs.] | Te Amsterdam, | By Jan van Dalen, Boekverkoper op de Colveniersburgwal | by de Staalstraat. 1756. 1 vol. sm. 4to. Full-page vignette, title, both backed blank, 7 more unpaged ll. ("Voorbericht"), map, pp. 1–286, + 3 ll. ("Bladwyzer"); with 5 pll. at pp. 34 (birds), 149 (birds), 172, 189, 216. *To which is appended*: Verbeteringen | Wegens de | Beschryving | Van het Groot Eyland | Ysland, | Beschreven | Door den Heer | Johan Anderson. | Opgemaakt in een tweejarig verblyf | op dat Eyland, | Door den Heer | Niels Horrebow. 5 unpaged ll., pp. 1–158.

See the orig. ed., 1746, and the French version, 1750. In this Dutch version, the bird-matter relating to Iceland is at pp. 33–41, with the original plate of the Hawk and Owl; that relating to Greenland is at pp. 146–155, with a plate of the "Mallemuk", which I do not find in my copy of the original.

1758. DU PRATZ, LE P. Histoire | de la | Louisiane, | Contenant la Découverte de ce vaste Pays; | sa Description géographique; un Voyage | dans les Terres; l'Histoire Naturelle; les | Mœurs, Coûtumes & Religion des Natu- | rels, avec leurs Origines; deux Voyages | dans le Nord du nouveau Mexique, dont | un jusqu'à la Mer du Sud; ornée de deux | Cartes & de 40 Planches en Taille douce. | Par M. Le Page du Pratz. | Tome premier [-troisième]. | A Paris, | Chez | . . . | — | M. DCC. LVIII. 3 vols. 12mo. Vol. I, pp. i–xvj, 1–358. Vol. II, 2 p. ll., pp. 1–441. Vol. III, 2 p. ll., pp. 1–451 + 5. With 42 maps and pll. in all.

This is the orig. ed.; there are several others; see 1763 and 1774.

Vol. II, pp. 109–143, contains a commentary on various birds: Chap. IX, pp. 103-

1758. Du Pratz, Le P.—Continued.

123, Des Oiseaux Carnaciers et Aquatiques. Chap. X, pp. 124–136, Des Oiseaux des Bois; Chasse aux Pigeons Ramiers; Leur quantité prodigieuse; Chasse aux Etourneaux. Chap. XI (lettered IV), p. 136, *seq.*, Suite des Oiseaux: des armes et de la nourriture du Pic-bois; du Colibri ou Oiseau-Mouche; des Insectes volans. Several of these species are rudely illustrated. The matter is very wild, and of no account.

1761. Charlevoix, F. X. de. Journal of a Voyage to North America .... In a series of Letters to the Duchess of Lesdiguierres. Translated from the French of P. de Charlevoix. In two volumes. London, printed for R. and J. Dodsley in Pall Mall, 1761. Vol. I, half-title, title, and table, pp. viii + map + pp. 382. Vol. II, half-title, title, and table, pp. viii + 380 + (xxvi).

Not seen—title abridged from Field, who says:—"This is a translation of the third volume of the *Histoire de la Nouvelle France*. Another edition, and an entirely independent translation of Charlevoix's work, was printed in London, 1763, entitled *Letters to the Duchess of Lesdiguieres*. It is printed in a much inferior manner, and somewhat less complete." Whence it appears that the present work should contain the bird-matter mentioned at 1744, *q. v.*

1763. Du Pratz, Le P. The | History | of | Louisiana, | or of | The Western Parts | of | Virginia and Carolina: | containing | A Description of the Countries that lye | on both sides of the River Missisipi: | with | An Account of the settlements, Inhabitants, | Soil, Climate, and Products. | — | Translated from the French, | (lately published,) | By M. Le Page Du Pratz; | with | Some Notes and Observations | relating to our Colonies. | — | In Two Volumes. | — | Vol. I [II]. | — | London, | Printed for T. Becket and P. A. De Hondt | in the Strand. MDCCLXIII. 2 vols. 16mo. Vol. I, 2 p. ll., pp. i–viii, i–l, map, pp. 1–368. Vol. II, 4 p. ll., map, pp. 1–272.

Vol. II, Chap. VII, pp. 75–96, "Of Birds, and Flying Insects." See the orig. ed., 1758.

1765. Cranz, D. David Cranz | Historie | von | Grönland | enthaltend | Die Beschreibung des Landes und | der Einwohner &c. | insbesondere | die | Geschichte | der dortigen | Mission | der | Evangelischen Brüder | zu | Neu-Herrnhut | und | Lichtenfels. | — | Mit acht Kupfertafeln und einem Register. | — | Barby bey Heinrich Detlef Ebers, und in Leipzig | in Commission bey Weidmanns Erben und Reich. | 1765. 2 vols. 16mo size, 8 leaves to a sig. Vol. I, 17 p. ll., pp. 1–512. Vol. II, half-title l., pp. 513–1132, + 13 ll. Maps and pll. in both vols.

This is the *editio princeps*. For the bird-matter, see later eds., 1767 and 1820. The author's name is David Cranz here; David Crantz in all the other editions I have handled.

1767. Crantz, D. Historie van Groenland .... 3 vols. 8vo. Harl. 1767.

Not seen.—See the English ed. of this date, and especially of 1820.

1767. Crantz, D. The History of Greenland, containing .... By David Crantz. Translated from the High-Dutch, and illustrated with Maps and other Copper-plates. In two Volumes. London, printed for the Brethren's Society for the Furtherance of the Gospel among the Heathen, 1767. Vol. I, pp. lix, 405, 2 maps, 5 pll. Vol. II, 1 p. l., pp. 498, 2 pll.

Not seen—title abridged from Field, who says that this first English ed. is a literal translation of the German, and vastly superior to the late English ed. of 1820, stated to be not only abridged, but interpolated. Field refers to an ed. by La Trobe, 1780. For the bird-matter, see the ed. of 1820.

1768. Bossu, —. Nouveaux Voyages aux Indes Occidentales; Contenant une Relation des differens Peuples qui habitent les environs du grand Fleuve Saint-Louis, appele vulgairement le Mississipi; leur religion; leur gouvernement, leurs moeurs; leurs guerres & leur commerce. Par M. Bossu, Capitaine dans les Troupes de la Marine. A Paris, 1768. 2 vols. 12mo. Vol. I, pp. xx, 244, pl. Vol. II, pp. 262, 2 pll.

Not seen—title and collation from Field. This is the orig. ed. See the English version, 1771.

1770-71. Kalm, P. Travels | into | North America; | containing | Its Natural History, and | A circumstantial Account of its Plantations | and Agriculture in general, | with the | civil, ecclesiastical, and commercial | state of the Country, | The manners of the inhabitants, and several curious | and important remarks on various subjects. | By Peter Kalm, | Professor of Oeconomy in the University of Aobo in Swedish | Finland, and Member of the Swedish Royal Academy of Sciences. | Translated into English | By John Reinhold Forster, F. A. S. | Enriched with a Map, several Cuts for the Illustration of | Natural History, and some additional Notes. | — | Vol. I [-III]. | — | Warrington: Printed by William Eyres. | MDCCLXX. [London: Printed for the Editor; | And Sold by T. Lowndes, in Fleet-street. MDCCLXXI.] 3 vols. 8vo. Vol. I, Warrington, 1770, pp. i–xvi, 1–400 + 1 p., 1 pl. at p. 322. Vol. II, London, 1771, pp. 1–352, 4 pll. (3 pll. of birds, not in the orig., nor in the German). Vol. III, London, 1771, pp. i–viii, 4 ll., 1–310, 6 ll., no pll.

This is the first English ed. There is another, 2 v. 8°, London, 1772, *q. v.*

1771. Bossu, —. Travels | through that part of | North America | formerly called | Louisiana. | By Mr. Bossu, Captain in the | French Marines. | Translated from the French, | By John Reinhold Forster, F. A. S. | Illustrated with Notes relative chiefly to | Natural History. To which is added by the translator | . . . | — | Vol. I [II]. | — | [Quotation.] | — | London: | Printed for T. Davies in Russel-street, Covent-Garden. | M DCC LXXI. 2 vols. 8vo. Vol. I, pp. i–viii, 1–407. Vol. II, 1 p. l., pp. 1–432.

Vol. I, pp. 94–97, is a formal list of a few birds, by the editor, as footnote to a mere paragraph of the author's. At pp. 368–375, the author describes a few species, as the Karancro (*i. e.*, Carrion Crow), Flamingo, Stares, Parrots, The Pope (*Cyanospiza ciris*), Cardinal-bird, Hummingbird, Pelican, Spoonbill, etc. The matter is not of the slightest consequence.

1771. Catesby, M. The | Natural History | of | Carolina, Florida, | and | The Bahama Islands: | containing the figures of | Birds, Beasts, Fishes, Serpents, Insects, and Plants: | Particularly, those not hitherto described, or incorrectly figured by former Authors, | with their Descriptions in English and French. | To which is prefixed, | A new and Correct Map of the Countries; with Observations on their Natural State, | Inhabitants, and Productions. | By the late Mark Catesby, F. R. S. | Revised by Mr. Edwards, of the Royal College of Physicians, London. | To the whole is now added a Linnæan Index of the Animals and Plants. | Volume the First [Second]. | [French version of the title follows.] | London. | Printed for Benjamin White, at Horace's Head in Fleetstreet. | MDCCLXXI.

1771. CATESBY, M.—Continued.

Folio. Vol. I, containing the Birds and Plants, 2 p. ll., pp. i–vii, 1–100, + 2 pp. of Linnæan Index, with pll. 1–100 intercalated with text opposite each page—the numeration of the pll. being same as the pagination. Vol. II contains the Mammals, etc.; but the Appendix, pp. 101–120, + 3 pp., contains a few additional birds, raising the total number treated to 113. Text in English and French, in parallel columns; birds presented under names in both these languages, but primarily under Latin polynomial names. This is a later "revised" and bettered edition (original edition, 1731–48), with Linnæan concordance at end of each volume. The plates, though violent both in drawing and coloring, like the *Pl. Enlum.*, are recognizable almost without exception; most of the species treated were described and figured for the first time in the original edition, which furnished the source of many Linnæan species. The work is classic, conspicuous in merit *inter congeneres sui temporis*, and indispensable for occasional consultation.

1771. FORSTER, J. R. A | Catalogue | of the | Animals | of | North America. | Containing, | An Enumeration of the known Quadrupeds, Birds, | Reptiles, Fish, Insects, Crustaceous and | Testaceous Animals; many of which are New, and | never described before. | To which are added, | Short Directions | for Collecting, Preserving, and Transporting, | all Kinds of | Natural History Curiosities. | By John Reinhold Forster, F. A. S. | — | [Quotation.] | — | London: | Sold by B. White, at Horace's Head, in Fleet-Street. | — | M. DCC. LXXI. 8vo. pp. 43, pl. i (frontispiece). > Birds. pp. 8–17, 36, 37.

A scarce tract. It contains, of birds, a nominal list of 302 spp., some named binomially, others not, with references to Pennant, Catesby, Edwards, etc. The list, in connection with those of other classes of animals, is surprisingly extensive, besides being the first of its kind. Many of the birds are marked "n. s."; these names are given by permission from Pennant's MSS., and this is actually the original appearance in print of various species subsequently described by Pennant; but as neither scientific names are imposed upon them, nor descriptions appended, the brochure remains simply a literary curiosity, which need not be referred to except as such. The plate is a fair likeness of *Falco sparverius*.

1772. FORSTER, J. R. An Account of the Birds sent from Hudson's Bay; with Observations relative to their Natural History; and Latin Descriptions of some of the most uncommon. < *Philos. Trans. Lond.*, lxii, 1772, art. xxix, pp. 382–433.

Fifty-eight species noticed, with descriptive and biographical matter. The second part of the article, containing the above-mentioned Latin descriptions, is separately entitled "Descriptiones Avium Rariorum e Sinu Hudsonis", and is at pp. 423–433. The following seven are new species:—Falco Sparadiceus, p. 383; Strix Nebulosa, pp. 386, 424; Emberiza Leucophrys, pp. 403, 426; Fringilla Hudsonias, pp. 406, 428; Muscicapa Striata, pp. 406, 428; Parus Hudsonicus, pp. 408, 430; Scolopax Borealis, pp. 411, 431. Several other actually new species are indicated varietally without names, or under names of other known species to which they are wrongly referred. "Turdus no. 22", p. 400, is an early, if not the first, notice of *Scolecophagus ferrugineus*, as "Hirundo, 35" is of *Petrochelidon lunifrons*.

1772. KALM, P. Travels | into | North America; | containing | its Natural History, and | A circumstantial Account of its Plantations | and Agriculture in general, | with the | civil, ecclesiastical and commercial | state of the country, | The manners of the inhabitants, and several curious and | important remarks on various subjects. | By Peter Kalm, | Professor of Oeconomy in the University of Aobo in Swedish Finland, | and Member of the Swedish Royal Academy

1772. KALM, P.—Continued.

of Sciences. | Translated into English | By John Reinhold Forster, F. A. S. | Enriched with a Map, several Cuts for the Illustration of Natural | History, and some additional Notes. | — | The second edition. | — | In two volumes, | Vol. I [II]. | — | London, | Printed for T. Lowndes, N° 77, in Fleet-street. 1772. 2 vols. sm. 8vo. Vol. I, pp. i–xii, 1–414, 6 pll. Vol. II, map, pp. i–iv, 1–423, with 4 ll. of index.

This edition followed immediately after the first English version of 3 vols. 8vo, 1770–1771. "No circumstance interesting to natural history or to any other part of literature has been omitted." The illustrations, as well as Forster's notes, are additional to the original Swedish. Kalm was a good observer, and told what he saw in a straightforward simple way. The book is full of zoological matter *passim*, in which ornithology is fairly represented, not under any special head; and these accounts are among the bases of several Linnæan species, though largely anticipated by Catesby and Edwards. Among the species noticed are the Bluebird, Catbird, Crow, Gull, Hummingbird, Maize-thief (*Agelæus*), Martin, Mockingbird, Partridge, Wild Pigeon, Cardinal Redbird, Snow Bunting, Ptarmigan, Swallow (with editor's *excursus* on the subaqueous torpidity of these birds), Titmouse, Turkey, Whippoorwill, Woodpeckers (list of the latter, I, pp. 377–379), etc. Figured in vol. I, Mockingbird and Robin, pl. opp. p. 170; Purple Grakle and Red-shouldered Blackbird, pl. opp. p. 368; Wild Pigeon, pl. opp. p. 374.—*Cf.* the orig. ed., 1753–61; and German version, 1754–64.

1774. CURTIS, R. Particulars of the Country of Labradore, extracted from the Papers of Lieutenant Roger Curtis, of His Majesty's Sloop the Otter, with a Plane-Chart of the Coast. < *Philos. Trans. for* 1774, lxiv, pt. ii, 1774, pp. 372–388.

Short account of the birds, pp. 377, 378.

1774. DU PRATZ, LE P. The | History | of | Louisiana, | or of | the western parts | of | Virginia and Carolina: | Containing a Description of the | Countries that lie on both Sides of the River Missisippi: | With an Account of the | settlements, inhabitants, soil, climate, and products. | — | Translated from the French | Of M. Le Page Du Pratz; | With some Notes and Observations relating to our Colonies. | — | A new edition. | — | London, | Printed for T. Becket, Corner of the Adelphi, in the Strand. | — | MDCCLXXIV. 1 vol. 8vo. 4 p. ll., pp. i–xxxvi, 1–387, 2 maps.

In this edition, Chap. VII, "Of Birds and Flying Insects", is at pp. 271–283. See orig. ed., 1758.

1776. KALM, P. Beskrifning på Norr-Americanske Mulbärsträdet, Morus rubra kalladt. < *Kongl. Svensk. Vetens. Acad. Handl.*, xxxvii, 1776, pp. 143–163.

Mulberries as food of various birds, etc., p. 155.

1777. CHARLEVOIX, F. X. DE. Histoire de la Nouvelle France. . . . . Paris, 1777. 12mo.

Not seen.

1778. CARVER, J. [Travels, etc.]

The *editio princeps*; not seen by me. There are several others, two of which are fully cited below, 1781 and 1796. The work of the celebrated traveller presents formal notice and description of about 40 spp. of birds, including the traditional "Wakon-bird", about which various Indian superstitions cluster.

1780. FABRICIUS, O. Favna | Groenlandica, | systematice sistens | Animalia Groenlandiae occiden- | talis hactenvs indagata, qvoad nomen | specificvm, triviale, vernacvlvmqve; synonyma avcto- | rvm plvrivm, descriptionem, locvm, victvm, genera- | tionem, mores, vsvm, captvramqve singvli, provt | detegendi occasio fvit, maximaqve parte secvn- | dvm proprias observationes | Othonis Fabricii | ministri evangelii, qvondam Groen- | landis ad Coloniam Friderichshaab, posthac Norvagis | Drangedaliae, nvnc vero Danis Hopvnti ivtiæ, mem- | bri societatis scientiarvm qvae est Hafniae. | [Design.] | — | Hafniae et Lipsiae, | Impensis Joannis Gottlob Rothe, | avlae atqve vnivers. Reg. Bibliopolae. | MDCCLXXX. | 1 vol. 8vo. pp. xvi, 452, with 1 folded pl. > II. Aves. pp. 53–124.

The title is sufficiently explicit. Classification chiefly according to Müller's *Prodrome*. Species ostensibly 53 (54); none new; "Species hactenas ignotas, vel saltem a scriptoribus classicis, quatenus mihi notum, nondum descriptas, asterisco (*) notaui. . . . A me vel nunquam visae, vel minus rite lustratae, sed secundum effatum aliorum allatae signum crucis (†) sibi adiunctum habent" (p. xi).

1781. CARVER, J. Travels | through the | interior parts | of | North America, | in the | years 1766, 1767, and 1768. | By J. Carver, Esq. | Captain of a company of provincial | troops during the late | war with France. | Illustrated with Copper plates, | coloured. | The third edition. | To which is added, Some Account of the | Author, and a Copious Index. | London: Printed for C. Dilly, in the Poultry; H. Payne, in | Pall-mall; and J. Phillips, in George-Yard, | Lombard-Street. | MDCCLXXXI. 1 vol. 8vo. Eng. portrait, 2 p. ll., pp. 1–22, + 11 ll., i–xvi, 1–543 + 10 ll., 2 maps, 5 pll. > Chap. XVIII. Of the Beasts, Birds, Fishes, Reptiles, and Insects, which are found in the interior Parts of North America. pp. 441–494.

Birds, pp. 466–476.—For notice of this publication, see eds. of 1778 and 1796.

1782. JEFFERSON, T. Notes on the state of Virginia; written in the year 1781, somewhat corrected and enlarged in the winter of 1782, for the use of a foreigner of distinction, in answer to certain queries proposed by him respecting 1. Its Boundaries. 2. Rivers. 3. Sea Ports. 4. Mountains, &c. [Paris.] MDCCLXXXII. 8vo. pp. 391.

This first edition of Jefferson's "Notes" was printed in Paris for private circulation (200 copies), without title-page, and is not to be regarded as published. I have not seen a copy. Above title is quoted from Bartlett's Catalogue of the Library of John Carter Brown. From this came a French version, 1786; some say also 1785. For circumstances of the work prior to the regular publication of the English edition, see Bartlett, *op. cit.*, 192; and especially Randall's Life of Jefferson, vol. i, p. 414 (8vo, New York, 1858).—The date, 1782, is supposed to be that of preparation, not of printing, of the work. There have been numerous imprints; O'Callaghan's list of them (with some additional data) is as follows:—Ed. of 1782, without a title-page, 200 copies [privately printed].—Philadelphia, 1785 [supposed to be merely circulation there of some of the copies of 1782 ed.].—French version, 8vo, Paris, 1785, and Paris, Barrois, 1786.—8vo, London, Stockdale, 1787 [the first properly published edition, from which Jefferson's List of Birds acquires date].—8vo, Philadelphia, Prichard & Hall, 1788.—Philadelphia, 1792.—Philadelphia, Carey, 1794.—8vo, Baltimore, 1800.—8vo, New York, Davis, 1801 [called the "3d Amer. ed.", which it is not].—8vo, Philadelphia, Rawle, 1801, "1st hot pressed ed."—Boston, Carlisle, 1801, the 8th Amer. ed.—18mo, Boston, Sprague. 1802, the 9th Amer. ed.—16mo, Trenton, Wilson & Blackwell, 1803.—New York, 1804.—

1782. JEFFERSON, T.—Continued.

12mo, Philadelphia, Hogan & Thompson, 1815.—Boston, 1829.—16mo, Boston, 1832.—8vo, Richmond, Randolph, 1853. Also, 8vo, Washington, 1854, being in vol. viii of Jefferson's "Works". Many of these eds. are entered in the present bibliography; see some of them, especially 1786 and 1787.

1785. PENNANT, T. Arctic Zoology. | Vol. II. | Class II. Birds. | [Engraving.] | Pied Duck, N° 488. | London: | Printed by Henry Hughs. | M. DCC. LXXXV. [Author's name not on title-page.] 4to. pp. 187–586, with 7 additional ll. of "Index" and "Errata"; pagination and numeration of species continued from vol. I, which consists of the mammals. Pll. ix–xxiii.

The whole work, in 3 vols., dates 1784–1787; there is a German translation, 2 vols. 4to, Leipzig, 1787, and a 3d ed., 2 vols. 4to, 1792.—"Designed as a sketch of the Zoology of North America . . . . supplemented by a description of the Quadrupeds and Birds of the north of *Europe* and *Asia*, from latitude 60° to the farthest known parts of the *Arctic* World, together with those of *Kamtschatka* and the parts of *America* visited on the last voyage of the illustrious Cook . . . . in the form of an Appendix to each genus, and distinguished by a *fleur de lis*; and the species by literal instead of numeral marks which distinguish those of *North America*" (extract from advertisement in 1st vol.). Two Divisions, of Land and Water Birds; 8 Orders, 59 genera, ostensibly 510 numbered North American species, with one additional under "Errata," and numerous others of Europe and Asia not enumerated; all given only under English names—more's the pity!—with moderately full Latin and other synonymy and references; text descriptive, geographical, historical, and biographical, inventoried with marginal annotations. Many of the species are the bases of subsequent binomial names of Gmelin and Latham; important in this regard! The plates are as follows:—pl. ix, St. John's and Chocolate-colored Falcons; pl. x, Swallow-tailed Falcon; pl. xi, Red, Mottled, and Barred Owls; pl. xii, Baltimore Oriole, ♂, ♀, nest; pl. xiii, Ferrugineous Woodpeck and "Canada" [but the figure and description are clearly of those of the Carolina] Nuthatch; pl. xiv, Passenger and Carolina Pigeon; pl. xv, Varied Thrush; pl. xvi, Spotted Grosbeak and White Crowned Bunting; pl. xvii, Black Throated and Cinereous Bunting; pl. xviii, Aculeated Swallow and Long-winged Goatsucker; pl. xix, Eskimaux Curlew and Little Woodcock; pl. xx, Clapper Rail and Semipalmated Snipe; pl. xxi, American Avocet; pl. xxii, Pied-billed Grebe and Marbled Guillemot; pl. xxiii, Falcated Duck and Western Duck.

1786. JEFFERSON, T. Observations | sur | La Virginie, | Par M. J * * *. | Traduites de l'anglois | [par l'Abbé Morellet]. | [Vignette.] | A Paris, | Chez Barrois, [etc.] | — | 1786. 12mo. 2 p. ll., pp. viii, 290, 1 l., map, table.

A copy of the privately printed edition of 1782 having been surreptitiously obtained, this French version was made, printed, and published in advance of the authentic English edition of 1787. See what is said under heads of the editions of 1782 and 1787. The French revision is utterly condemned by Jefferson (see *Randall's Life*, vol. i, p. 414). The bird-matter in this ed. is at pp. 92–99.

1787. CLAVIGERO, F. S. The | History | of | Mexico. | Collected from | Spanish and Mexican Historians, | from | Manuscripts, and Ancient Paintings of the Indians. | Illustrated by | Charts, and other Copper Plates. | To which are added, | Critical Dissertations | on the | Land, | the Animals, | and Inhabitants of Mexico. | By Abbé D. Francesco Saverio Clavigero. | Translated from the Original Italian, | By Charles Cullen, Esq. | In Two Volumes. | Vol. I [II]. | London, | Printed for G. G. J. and J. Robinson, No. 25, Pater-noster

1787. CLAVIGERO, F. S.—Continued.

Row. | MDCCLXXXVII. 2 vols. 4to. Title-l., pp. i–xxxii, 2 ll., pp. 1–476. Vol. II, 2 ll., pp. 1–463. 2 maps and 25 pll.

Vol. I, Book 1, Sect. xi, pp. 46–56, "Birds of Mexico", with figure of the "King of the Zopilots" on pl. iv.

The "second edition" of Cullen's translation is cited beyond, 1807; there is a Philadelphia ed., 3 vols. 8vo, Dobson, 1817, and doubtless others.—According to the Bibliographies accessible as I write, the orig. ed., in Italian, dates 1780–81, 4 vols. 4to. There is a German ed., Geschichte von Mexico, etc., 2 vols. 8vo, Leipzig, 1789–90; and several Spanish ones.

1787. JEFFERSON, T. Notes | on the | State of Virginia. | Written by Thomas Jefferson. | Illustrated with | A Map, including the States of Virginia, | Mary- | land, Delaware and Pennsylvania. | — | London: | printed for John Stockdale, opposite | Burlington-House, Piccadilly. | M. DCC. LXXXVII. 1 vol. 8vo. 2 p. ll., pp. 382, map, and folded table.

Contains, pp. 113–118, a nominal list of the birds of the State, 77 in number, under Linnæan, Catesbyan, and popular names, with references to *Brisson's Oiseaux;* a few others mentioned at end of the list.—The original draft of the work, which bears date 1782, was printed (200 copies) for private circulation, without title-page, and cannot be considered as published. There was an anonymous French version in 1786. The English edition of 1787 being the first one published with sanction of the author, and avowed by him, is the one from which Jefferson's List of the Birds acquires its proper date (see the eds. of 1782 and 1786).

1787. PENNANT, T. Pennant's Arktische Zoologie.—Thiergeschichte der nördlichen Polarländer aus dem Englischen des Herrn Thom. Pennant, mit Anmerkungen und Zusätzen durch E. A. W. Zimmermann. 2 vols. 4to. Leipzig. 1787.

Not seen—title at second-hand, illiteral and defective.

1788. JEFFERSON, T. Notes | on the | State | of Virginia. | Written by Thomas Jefferson. | — | Philadelphia: | Printed and Sold by Prichard and Hall, [etc.] | — | M. DCC. LXXXVIII. 1 vol. 8vo. 2 p. ll., pp. 244, 1 table.

A scarce edition. The bird-matter is at pp. 71–77.

1788. LOSKIEL, G. H. [History of his mission, etc.] . . .

Not seen.—This is the date of the German orig. ed.; see the English ed., 1794.

1791. BARTRAM, W. Travels | through | North & South Carolina, | Georgia, | East & West Florida, | the Cherokee Country, the extensive | Territories of the Muscogulges, | or Creek Confederacy, and the | Country of the Chactaws; | containing | an account of the soil and natural | productions of those regions, toge- | ther with observations on the | manners of the Indians. | Embellished with copper-plates. | — | By William Bartram. | Philadelphia: | printed by James & Johnson, | M,DCC,XCI. 1 vol. 8vo. 1 p. l., pp. i–xxiv, 1–522, pll.

The next edition was issued at London, and there was a second London ed., dated 1794. The ed. of Dublin, 1793, was a mere reprint of the 1st London ed. The work was translated into German, and published at Berlin, in 1793, as the xth vol. of the *Magazin von merkwürdigen neuen Reisebeschreibungen*, with the editor's (Zimmerman's) commentary. A French version appeared in 1799. I give all these except the 1st London ed.

Contains ornithological matter *passim*, and especially, at pp. 288–296, a Catalogue of Birds of Eastern United States, in which many species are named as new. For a complete exposition of the ornithology of this work, *cf.* COUES,

1791. BARTRAM, W.—Continued.

Proc. Acad. Nat. Sci. Phila., 1875, pp. 338-358; ALLEN, *Am. Nat.*, x, Jan., 1875; COUES, *Am. Nat.*, x, Feb., 1875. Among Bartram's new binomial names are the following:—*Strix arcticus, S. acclamator, S. peregrinator, Vultur sacra, V. atratus*, p. 289; *Falco regalis, F. piscatorius, F. aquilinus, F. gallinarius, F. pullarius, F. niger, F. ranivorus, F. glaucus, F. subcerulius, Corvus carnivorus, C. maritimus, C. frugivorus, C. floridanus*, p. 290; *Gracula purpurea, Cuculus carolinensis, Sitta varia, Certhia rufa, C. picta, Lanius griscus, L. garrulus, Muscicapa nunciola, M. cristata, M. rapax, M. subviridis*, p. 289 bis; *M. cantatrix, M. sylvicola, Alauda campestris, A. migratoria, Turdus melodes, T. minimus, Merula flammula, M. marilandica, Garrulus australis, Lucar* (n. g.) *lividus, Meleagris americanus* (called *M. occidentalis* at p. 83), *Tetrao tympanus, T. minor*, p. 290 bis; *Emberiza livida, E. varia, Carduelus americanus, C. pinus, C. pusilus, Fringilla rufa, F. fusca, Passer domesticus, P. palustris, P. agrestis, Calandra pratensis, Steurus predatorius, S. stercorarius, Motacilla fluviatilis, M. domestica, M. palustris, M. caroliniana, Regulus griceus*, p. 291; *R. peregrinus, Ruticilla americana, Parus cristatus, P. luteus, P. varius, P. cedrus, P. peregrinus, P. aureus, P. viridis, P. griccus, Hirundo cerdo, Caprimulgus lucifugus, C. americanus, Grus clamator*, p. 292; *G. pratensis, Ardea immaculata, A. mugitans, A. clamator, A. parva, Tantalus pictus, T. ichthyophagus*, p. 293; *Numenius americana, N. fluvialis, N. cinereus, Tringa rufa, T. cinerea, T. maculata, T. fusca, T. parva, Morinella americana, Anser branta, Anas subcerulea, A. leucocephala, A. caudacuta, A. principalis*, p. 294 ("492"); *A. migratoria, A. fistulosa, Colymbus migratorius, C. floridanus, C. colubrinus, C. musicus, Larus alber, L. griccus, Onocratalus americanus, Petrella pintada*, p. 295; *Charadrius maculatus, C. minor, Fulica floridana*, p. 296, spp. nn.—some of which are tenable by all the rules, while others I never claimed to be so. Barton's "*Fragments*", 1799, *q. v.*, is a valuable commentary on Bartram.

1791. MEARES, J. Voyages | Made in the Years 1788 and 1789, | from China to the N. W. coast of America: | with | an introductory narrative | of | a voyage | Performed in 1786, from Bengal, | in the Ship Nootka. | To which are annexed, | observations on the probable existence | of | a north west passage. | And some account of | the trade between the north west coast of America | and China; and the latter country and | Great Britain. | — | By John Meares, Esq. | — | Vol. I [II]. | — | London: | printed at the Logographic Press; | and sold by | J. Walter, No. 169, Piccadilly, opposite Old Bond Street. | 1791. 2 vols. sm. 8vo. pp. i-xii, i-lxxii, 1-363, maps, pll. Vol. II, 2 p. ll., pp. 1-332, + 32 unpaged ll. (Appendix), maps.

Slightly ornithological *passim; e. g.*, Vol. II, Chap. XXII, "Various Kinds of Birds.—Aquatic Fowls", p. 29.

1792. BELKNAP, J. The | History | of | New-Hampshire. | Vol. III. | Containing a geographical description of | the State; | with sketches of its natural | history, productions, | improvements, and | present state of Society and Manners, | laws and government. | By Jeremy Belknap, A. M. | Member of the Philosophical Society in Philadel- | phia, and of the Academy of Arts and Sciences | in Massachusetts. | Printed at Boston, for the Author, | by Belknap and Young, | State street. | — | MDCCXCII. Sm. 8vo. pp. 1-480, 1-8. > Chapter X. Native Animals: Birds. pp. 165-174.

The whole work is in 3 vols., of which vol. III alone is here cited. There is said to be another ed., 8vo, Boston, 1813.

Annotated list of 123 spp. of birds of New Hampshire. "The most full, which has been collected, but cannot boast of perfection." *Picus maculosus;* p. 166; *Charadrius maculatus*, p. 169; *Fringilla grisea, Muscicapa fusca*, p. 173, spp. nn., but no descriptions. I have seldom seen this work mentioned with reference to ornithology, its connection with which is scarcely recognized.

1792. CARTWRIGHT, G. A | Journal | of | Transactions and Events, | during a | residence of nearly sixteen years | on the | Coast of Labrador; | containing | many interesting particulars, | both of the | Country and its Inhabitants, | not hitherto known. | Illustrated with proper charts. | — | By George Cartwright, Esq. | — | In three volumes. | — | Vol. I [-III]. | — | Newark: | . . . . | — | 1792. 3 vols. 4to. Vol. I, 1 p. l., pp. i–viii, 1–287. Vol. II, pp. i–x, 1–505. Vol. III, pp. i–x, 1–248, [1]–[15].

Contains informal notices of mammals and birds *passim*.

1792. PENNANT, T. Arctic Zoology, etc. . . . London, 1792. 2 vols. 4to.

This I have not seen, and can say nothing about. See the orig. ed., 1785.

1793. BARTRAM, W. Travels | through | North and South Carolina, | Georgia, | East and West Florida, | the Cherokee Country, | the extensive Territories of the Muscogulges | or Creek confederacy, | and the country of the Chactaws. | Containing an account of the soil and natural produc- | tions of those regions; | together with observations on the manners of the Indians. | Embellished with copper-plates. | — | By William Bartram. | — | Dublin: | for J. Moore, W. Jones, R. McAllister, and J. Rice. | — | 1793. 1 vol. 8vo. pp. xxiv, 520, with 6 ll. index, pll.

See the orig. ed., 1791. This Dublin ed. is said to be a mere reprint of the *first* London ed., identical therewith in title, size, pagination, plates, and index.

1793. BARTRAM, W. William Bartram's | Reisen | durch | Nord- und Süd-Karolina, | Georgien, Ost- und West-Florida, | das Gebiet | der Tscherokesen, Krihks und Tschaktahs, | nebst umständlichen Nachrichten | von den Einwohnern, dem Boden und den Naturprodukten | dieser wenig bekannten grossen Länder. | — | Aus dem Englischen. | — | Mit erläuternden Anmerkungen | von | E. A. W. Zimmermann, | Hofrath und Professor in Braunschweig. 1 vol. sm. 8vo. pp. i–xxvi, 1 l., 1–469, pl. = Magazin von merkwürdigen neuen Reisebeschreibungen u. s. w. Zehnter Band. Berlin, 1793.

See the orig. ed., 1791. In this edition, Bartram's list of Birds is at pp. 279–294, and other bird-matter follows to p. 301. The list is partly given in the English, partly translated, annotated with references to Seligmann's Catesby, and otherwise bedevilled by the editor, who undertakes to identify most of Bartram's species, and succeeds in many cases. Of Bartram's genus *Lucar* he remarks very pertinently, "Dies Wort ist mir unbekannt, vielleicht ein Druckfehler."

1794. BARTRAM, W. Travels | through | North and South Carolina, | Georgia, | East and West Florida, | the Cherokee country, | the extensive Territories of the Muscogulges | or Creek confederacy, | and the country of the Chactaws. | Containing | an account of the soil and natural produc- | tions of those regions; | together with | observations on the manners of the Indians. | Embellished with copper-plates. | — | By William Bartram. | — | The second edition in London. | — | Philadelphia: Printed by James and Johnson. 1791. | London: | Reprinted for J. Johnson, in St. Paul's Church-Yard. | — | 1794. 1 vol. 8vo. pp. i–xxiv, 1–520, + 4 ll.; map, frontispiece, and 7 pll.

See the orig. ed., 1791. In the present edition, which is substantially the same as the original, the list of birds is at pp. 285–294, and bird-matter continues to p. 300; also occurs *passim*, as in the original.

1794. LOSKIEL, G. H. History | of the | Mission | of the | United Brethren | among the | Indians in North America. | — | In Three Parts. | — | By | George Henry Loskiel. | — | Translated from the German | by Christian Ignatius La Trobe. | — | London: | printed for the Brethren's Society for the | Furtherance of the Gospel: | sold at No. 10, Nevil's Court, Fetter Lane; | and by John Stockdale, opposite Burlington House, | Piccadilly. | — | 1794. 1 vol. sm. 8vo. Part I, pp. i–xii, map, 1–159. Part II, pp. 1–234. Part III, pp. 1–233, + 11 unpaged ll. of index and ads.

Orig. German ed., 1788; in the present one, Part I, Chap. VII, "Birds", pp. 89–94, there are remarks upon a few large or otherwise conspicuous species, such as would be likely to attract the casual observation of a missionary. These are presented for the most part under binomial Latin as well as vernacular names. The ubiquitous "Wakon bird", here called "the bird of the Great Spirit, and probably a species of the bird of paradise", reappears, clothed in a very gorgeous description.

1794. WILLIAMS, S. Natural and Civil History of Vermont. . . . Walpole, N. H. 1794. 8vo.

Not seen. There is a later edition, 1809, *q. v.* About a dozen pages are said to be devoted to the birds of the State, some 50 species being treated, under technical names, with various notes.

1795. HEARNE, S. A | Journey | from | Prince of Wales's Fort in Hudson's Bay, | to | the Northern Ocean. | Undertaken | by order of the Hudson's Bay Company, | for the Discovery | of copper mines, A Northwest passage, &c. | In the years 1769, 1770, 1771, & 1772. | — | By Samuel Hearne. | — | London: | printed for A. Strahan and T. Cadell: | And Sold by T. Cadell Jun. and W. Davis, (Successors to | Mr. Cadell,) in the Strand. | 1795. 1 vol. large 4to. pp. i–xliv, 1–458, 1 l., 9 maps and views. > Birds. Chap. X. pp. 398–448.

"The account of the principal quadrupeds and birds that frequent those Northern regions in summer, as well as those which never migrate, though not described in a scientific manner, may not be entirely unacceptable to the most scientific zoologists," says the author modestly, in his preface; and I entirely agree with him. He gives a good, faithful account of his observations on some fifty or more species, among them the notable "Horned Wavey" (p. 442), which afterward became *Anser rossii* of Baird. The whole story of "honest old Hearne" is interesting as well as veracious, and may be profitably consulted to this day.

1796. CARVER, J. Three years | Travels | through the | interior parts | of | North America, | for more than | five thousand miles; | containing | an account of the great lakes, and all the lakes, islands, | and rivers, Cataracts, mountains, minerals, | soil and vegetable productions of the North- | west regions of that vast continent; | with a | description of the Birds, beasts, | reptiles, insects, and fishes | peculiar to the country. | Together with a concise | history of the genius, manners, and customs | of the Indians inhabiting the lands that lie | adjacent to the heads and to the westward | of the great river Mississippi; | and an appendix, | describing the uncultivated parts of America that | are the most proper for forming settlements. | — | By Captain Jonathan Carver, | of the provincial troops in America. | — | Philadelphia: | Published by Key & Simpson;—1796. 1 vol. "8vo" (half-sheets, 4 l. to a sig.). pp. i–xx, 1–360, 1–20. > Chap. XVIII. > Of the Birds. pp. 309–316.

1796. CARVER, J.—Continued.

A list of about 40 species, with formal notice of half as many, most of which are identifiable. Here, as in some other works of the period, appears the celebrated "Wakon bird" (p. 314), an object of superstition among the Indians, which has taxed the guessing faculty of ornithologists to no avail. Parts of the description suit *Milvulus;* but the bird is probably fictitious, the account being drawn from "made-up" specimens used for religious or ornamental purposes.—See earlier eds., 1778, 1781.

1796. HEARNE, S. A | Journey | from | Prince of Wales's Fort, | in Hudson's Bay, | to | the Northern Ocean. | Undertaken | by order of the Hudson's Bay Company. | For the discovery of | copper mines, a north west passage, &c. | In the Years 1769, 1770, 1771, & 1772. | — | By Samuel Hearne. | — | Dublin: | Printed for P. Byrne, No. 108, and J. Rice, No. 111, | Grafton-street. | — | 1796. 1 vol. 8vo. pp. i–l, 1–459, 1 p., 9 maps and plans.

See the orig. ed., 1795. In the present ed., the bird-matter is at pp. 399–450. Same as the original, excepting in form. There is said to be another ed., 1807.

1797. BOSC, L. A. G. Description des objets nouveaux d'Histoire Naturelle trouvés dans une traversée de Bordeaux à Charlestown [S. Car.]. < *Bull. Soc. Philom.*, 1797, p. 9.

Not seen.

1799. BARTON, B. S. Fragments | of the | Natural History | of | Pennsylvania. | — | By Benjamin Smith Barton, M. D. | Correspondent-Member of the Society of the Antiquaries of Scotland; Member | of the American Philosophical Society; Fellow of the American Academy | of Arts and Sciences of Boston; Corresponding Member of the | Massachusetts Historical Society; Member of the Phy- | sical Society of Jena; one of the Foreign Members | of the Linnæan Society of London; | and | Professor of Materia Medica, Natural History and Botany, | in the | University of Pennsylvania. | — | Part First. | — | Neglecta, —sparsa colligit, utilia seligit —. | Baglivi. | Quæ Præsenti Opusculo desunt suppleat Ætas. | Quintilian. | — | Philadelphia: | Printed, for the author, by Way & Groff, | No. 48, North Third-Street. | 1799. Folio. Paper-cover title; other title, dedication, introduction, = pp. i–xviii; and pp. 1–24 of main text.

No more published. Very scarce. Copy in Congressional Library, formerly presented to the National Institute of Washington by the author's son, Thomas Pennant Barton. This tract, a mere "fragment", as the author says, is one of the most notable special treatises on North American ornithology of the last century. The author had every qualification of a great naturalist except success, his actual achievements being far from commensurate with his eminent ability and erudition. He seems to have lacked the faculty of utilizing what he knew; like a saturated solution wanting some slight circumstance to crystallize, the result was never realized. Had Barton reaped what he sowed, the fatherhood of American ornithology would be put back of Wilson. As it is, his work remains about on a par with that of Bartram in present significance, and its author is today chiefly known in ornithology by having proposed for the Barn Swallow the name *Hirundo horreorum*, which has been current since Baird revived it in 1858.

The whole tract is ornithological—a bird-picture drawn in the vicinity of Pennsylvania. The "Introduction", in effect, is chiefly an essay on migration, alleged torpidity, etc., based on extensive personal observation, set forth with elegance, erudition, and veracity. The main text consists, for the most part, of a calendary enumeration of the migratory birds of Pennsylvania, collated with the progress of vegetation and various meteorological and miscellaneous observations. The birds are treated in two categories: Sect. I. The Spring and Summer Birds of

1799. BARTON, B. S.—Continued.

Passage. Sect. II. Autumnal and Winter Birds of Passage. Sect. III is an annotated List of the resident Birds of Pennsylvania, occupying two folios. Then follow occasional or accidental residents, occasional visitants, and "Additions". The "Appendix", pp. 15–24, contains observations on the greater number of the birds which are mentioned in the preceding tables.

Barton was a strict binomialist; his nomenclature, however, is very imperfect, being modelled closely after Bartram; his tract, in fact, furnishes a valuable commentary on Bartram, and a quasi-concordance of the Bartramian nomenclature. Some new names are given to birds, in Sects. I and II, as follows, though mostly without proper description, if any:—*Fringilla domestica*, p. 1, no descr., = *Spizella socialis*; *F. exilis*, p. 1, no descr. (undetermined); *F. pinus* [Bartram], p. 1, no descr., = *Chrysomitris pinus*; *Certhia familiaris*, p. 3 [nec auct.], no descr., = *Troglodytes ædon* V., = *Motacilla domestica* Bartram; *Certhia floridana*, p. 5, no descr., = *Thryothorus ludovicianus*; *Strix diurnalis*, p. 9, no descr., indet.; these being those which are marked "mihi" in the calendar, though some of them are Bartram's, and though the calendar also includes some other names I never saw elsewhere. None of these are described at all. In Sect. III, where the birds are noted "in the order of the Linnæan arrangement", and especially in the "Appendix", we find a much better state of things; some new names occurring accompanied by sufficient description to entitle them to recognition, like *Hirundo horreorum* for example, and many other species of Bartram's being here identified and described under their Bartramian names. Whence it is obvious, that those who fight shy of *Bartram's* names, for whatever reason, must take a number of them on *Barton's* characterization. The following commentary will make the point clear at which I aim:—

Page 11.

"FALCO REGALIS of Bartram. *Travels.* Great Gray Eagle. This is our largest Eagle." (Obviously = *Haliætus leucocephalus*, juv.)

"FALCO AQUILINUS of Bartram. *Travels.* Great Red-Tailed Hawk. This is the largest species of Hawk hitherto discovered in Pennsylvania. The tail is of a red brick color." (Now, those who refuse to accept the specific term *aquilinus* from Bartram, 1791, may say BUTEO AQUILINUS (Barton, 1799)! instead of *B. borealis* Vieill.)

"FALCO GLAUCUS of Bartram. *Travels.*" (Bartram's description is repeated. Now, those who decline to have anything to do with Bartram, on the ground of his untenable nomenclature, will necessarily observe that ELANUS GLAUCUS (Barton, 1799)! must replace *E. leucurus* Temm.)

"STRIX VARIUS of Bartram. MS." (The description clearly indicates that this is a synonym of *S. nebulosa* Forster, 1772.)

"LANIUS COLLURIO? Red-backed Shrike." (Apparently intended for the young plumage of *L. borealis.*)

"CORVUS CORONE. Carrion Crow. (Crow.) This is the Corvus frugivorus of Bartram." (As I recently contended in *Pr. Phila. Acad.*, 1875, 346.)

"CERTHIA FUSCA of Bartram. MS. Brown-Creeper." (Fully described. A synonym of *Certhia rufa* Bartram, Trav., 1791, = *C. familiaris* auct.)

Page 13.

"PSITTACUS PERTINAX? Illinois Parrot? Either this or some other species of the genus deserves to be mentioned among the birds of Pennsylvania." (Obviously referring to *Conurus carolinensis.*)

Page 15.

"MUSCICAPA FUSCA. This is the Muscicapa nunciola of Bartram. *Travels.*"

"ALAUDA RUBRA. The Alauda migratoria of Bartram. *Travels.* The Alauda fusca of the same gentleman."

"FRINGILLA DOMESTICA (mihi). Motacilla domestica, or Regulus rufus of Bartram. *Travels.* In very mild winters, this sociable domestic little bird continues with us. It is the earliest of our spring singing birds. Its note is tremulous and agreeable. Catesby has figured it, Vol. i, P. 35." (This is very uncertain; Catesby's pl. 35 has been supposed to be *Spizella pusilla*, but never satisfactorily identified, and Bartram's *Motacilla domestica* is the House Wren.)

1799. BARTON, B. S.—Continued.

"FRINGILLA FERRUGINEA. I suspect this is the Hedge-Sparrow of Lawson, P. 144. It is the Fringilla rufa of Bartram. *Travels.* Edwards calls it Little Sparrow. Pl. 354. In New-York it is called the Shepard." (Wilson calls the Fox Sparrow (*Passerella iliaca*) "rufa" in one place, after Bartram, and "ferruginea" in another, probably after Barton. But what bird Barton means here is not evident.)

"FRINGILLA EXILIS [sp. n.]. This a good deal resembles the Motacilla Regulus, or Golden-crested Wren. Perhaps, they are the same." (Not identifiable.)

"GRACULA QUISCULA?" (The author carefully distinguishes two species of Grakles, one being the common CROW BLACKBIRD (*Q. purpureus*), the other, here called "G. quiscula?", *after Bartram*, being evidently the *Q. major* of authors, or the Boat-tailed Grakle.)

Page 17.

"HIRUNDO RUSTICA? This is not the Hirundo rustica of Europe. It wants a name. It may be called Hirundo horreorum, from its so generally frequenting our barns to build its nest."

Page 18.

"MOTACILLA TROGLODYTES? This is the Motacilla palustris, or Regulus minor, of Bartram. *Travels.*" (That is, *Cistothorus palustris.*)

"CERTHIA FAMILIARIS (mihi). I now suspect, that this is no other than the Certhia familiaris of Linnæus," . . . (But it certainly is not, if he means the same bird he called "C. familiaris" on p. 3.)

"LANIUS TYRANNUS. This I rather consider as a species of Muscicapa. It may be called Muscicapa rex" (sp. n. = *carolinensis* Gm.).

Page 20.

"CERTHIA FLORIDANA (mihi). This bird I do not find figured or described. It is mentioned by Mr. Bartram (*Travels*), under the name of Motacilla coroliniana, or Regulus magnus," etc. (Full description follows. The bird is evidently *Thryothorus ludovicianus* (Lath.).)

"Fringilla pinus (mihi)." (Given as a new species; but the name *Carduelus pinus* occurs in Bartram for the same species.)

1799. BARTRAM, W. Voyage | dans les parties sud | de l'Amérique | septentrionale; | Savoir: les Carolines septentrionale et méridio- | nale, la Georgie, les Florides orientale et | occidentale, le pays des Cherokées, le vaste | territoire des Muscogulges ou de la confédé- | ration Creek, et le pays des Chactaws; | Contenant des détails sur le sol et les productions natu- | relles de ces contrées, et des observations sur les mœurs des Sauvages qui les habitent. | Par Williams [*sic*] Bartram. | Imprimé à Philadelphie, en 1791, et à Londres, | en 1792, et trad. de l'angl. par P. V. Benoist. | Tome Premier [Second]. | A Paris, | Chez {Carteret et Brosson, libraires, rue Pierre- | Sarrasin, nos 13 et 7. | {Dugour et Durand, rue et maison Serpente. | An VII. [1799.] 2 vols. sm. 8vo. Vol. I, half-title, frontispiece, title, pp. 1–457, 1 l., map, and pll. Vol. II, half-title, title, pp. 1–436, 1 l., pl.

See the orig. ed., 1791. In this French version, the list of birds is in vol. II, at pp. 40–56, and bird-matter continues to p. 66; also occurs elsewhere, as in the original.

1800. D'ERES, C. D. R. Memoirs | of | Charles Dennis Rusoe D'Eres, | A Native of Canada; | Who was with the Scanyawtauragahrooote | Indians eleven years, with a particular | account of his Sufferings, &c. during | his tarry with them, and his safe | return to his Family Connec- | tions in Canada; | to which is added | An Appendix, | containing | A brief account of their Persons, Dress,

1800. D'ERES, C. D. R.—Continued.

| Manners, Reckoning, Time, Mode of Govern- | ment, &c. Feasts, Dances, Hunting, Wea- | pons of War, &c. Making Peace, Diversions, | Courtship, Marriage, Religious Tenets, | Mode of Worship, Diseases, Method of | Cure, Burying their Dead, Character | of the Scanyawtauragahrooote Indians, | Particular Description of the Quadru- | peds, Birds, Fishes, Reptiles and Insects, | which are to be met with on and in the | vicinity of Scanyawtauragahrooote | Island. | — | Copy Right Secured. | — | Printed for, and Sold by Henry Ranlet, Exeter. | — | 1800. 1 vol. sm. 12mo. pp. i–vi, 7–176.

Chapter XV, on the quadrupeds, birds, etc. (pp. 170–173), names many kinds of the latter, and describes more particularly the Blackbird, Hummingbird, the Whetsaw (*Coccygus erythrophthalmus?*), and the famous "Wacon-bird". The description of the latter is not reconcilable with any known species, but, in the light of other accounts of the same bird, may be doubtfully considered a hint of *Milvulus forficatus*. Field says of our author that "his narrative is at all events little better than a fiction".

1800. JEFFERSON, T. Jefferson's | Notes, | on the State of Virginia; | with the | Appendixes—complete. | — | To which is subjoined, | [etc.] | — | Baltimore: | Printed by W. Pechin, [etc.] | 1800. 1 vol. 8vo. pp. 1–194, (1)–(53), [1]–[21] (three separate paginations).

In this edition, the list of the birds is at pp. 72–77.

1801. JEFFERSON, T. Notes | on the | State of Virginia. | — | By Thomas Jefferson. | — | First hot-pressed edition. | — | Philadelphia. | R. T. Rawle, Publisher,—June, 1801. | John Thompson, Printer. 1 vol. 8vo. 2 p. l., pp. 436, 56, frontisp., 1 pl., and maps.

Birds in this edition at pp. 133–137.

1801. JEFFERSON, T. Notes | on the | State of Virginia. | With an | Appendix. | — | By Thomas Jefferson. | — | Third American Edition. | — | — | New-York: | Printed by M. L. & W. A. Davis.—For Furman & Loudon, | [etc.] | — | 1801. 1 vol. 8vo. pp. 392, frontisp., map, and folded leaf.

Though this is called the "3d", there were certainly more than two previous editions. Birds at pp. 102–107.

1802. JEFFERSON, T. Notes | on the | State of Virginia. | With an | Appendix. | — | By Thomas Jefferson. | — | Ninth American edition. | — | Boston: | Printed by H. Sprague, No. 44, Marlboro' Street. | 1802. 1 vol. 18mo. pp. 368, map, tab., and pl.

Birds at pp. 95–100.

1802. SEWASTIANOFF, —. Description d'une nouvelle espèce de Canard et d'une varieté de l'huitrier, qui se trouvent dans le cabinet d'histoire naturelle de l'Academie Imperiale des Sciences. < *Nova Acta Acad. Scient. Imp. Petrop. for* 1800, xiii, 1802, pp. 346–351, pl. x.

Anas canagica, sp. n., p. 349, pl. x, and a black *Hæmatopus*, not named (afterward *H. niger* Pall.), both from Northwestern America.

1803. JEFFERSON, T. Notes | on the | State of Virginia. | With an | Appendix | relative to the murder of Logan's family. | By Thomas Jefferson. | — | — | Trenton: | Printed by Wilson & Blackwell, for Mathew Carey, No. 118 Market-st, | Philadelphia. | — | 1803. 1 vol. 16mo. pp. 356, no illustr.

Birds at pp. 94–98.

1805. Barton, B. S. Letter to M. Lacepede, of Paris, on the Natural History of North America. < *Tilloch's Philos. Mag.*, xxii, 1805, pp. 97–103, 204–211.

Only the second instalment of the article relates to birds. It notices the migrations of a few North American species, asserts the torpidity in winter of Swallows, Swifts, and Hummingbirds, and the breeding of *Aix sponsa* in trees.

1807. Barton, B. S. A | Discourse | on | some of the principal desiderata | in | Natural History, | and on | the best means of promoting the study | of this | Science, | in the United States. | — | Read before the Philadelphia Linnean Society, | on the 10th of June, 1807. | — | By Benjamin Smith Barton, M. D., | President of the Society; one of the vice-Presidents of the | American Philosophical Society; and Professor of | Materia Medica, Natural History and Botany, | in the University of Pennsylvania. | — | Philadelphia: | Printed by Denham & Town, No. 278, South Second-street. | — | 1807. "8vo" (half-sheets). 3 p. ll., pp. 9–90.

A rare tract. Ornithological matter at pp. 20–22, 68, 79, 88–90.

1807. Clavigero, F. S. The | History | of | Mexico. | Collected from | Spanish and Mexican historians, | from | Manuscripts and ancient paintings of the Indians. | Illustrated by | charts, and other copper plates. | To which are added, | critical dissertations | on the | land, the animals, and inhabitants of Mexico. | By Abbé D. Francesco Saverio Clavigero. | Translated from the original Italian, | By Charles Cullen, Esq. | The second edition. | In two volumes. | Vol. I [II]. | London: | printed for J. Johnson, St. Paul's Churchyard, | by Joyce Gold, Shoe Lane. | — | 1807. 2 vols. 4to. Vol. I, map, titles, pp. v–xxxii, 2 ll., pp. 1–476, pll. 24. Vol. II, 2 p. ll., pp. 1–463.

Vol. I, Book I, Sect. XI, Birds of Mexico, in this edition at pp. 46–56; a summary account of sundry kinds, of no special value now, unless it be for the Mexican and Spanish names under which such as are identifiable are presented.

1807. Hearne, S. Journey to the Northern Ocean, etc. London, 1807.

Not seen.—See the earlier eds., 1795 and 1796.

1807. Vieillot, L. P. Histoire Naturelle | des Oiseaux | de | L'Amérique Septentrionale, | contenant un grand nombre d'espèces décrites ou figurées | pour la première fois. | Par M. L. P. Vieillot, | continuateur de l'Histoire des Colibris et des Oiseaux-Mouches; auteur de celle des Jacamars, | des Grimpereaux, des Promerops, des Oiseaux de Paradis et de la plupart des articles d'Ornithologie | du nouveau Dictionaire d'Histoire Naturelle, etc. | Tome premier [second]. | — | A Paris, | chez Desray, Libraire, Rue Hautefeuille, N° 4. | M. DCCC. VII. | De l'Imprimerie de Crapelet. | 2 vols. folio. pll. Vol. I, 2 p. ll., pp. iv, 90, pll. 1–57. Vol. II, 1 p. l., pp. ii, 74, pll. 57 *bis*–124 (in each vol. some numbers of the pll. duplicated). Stated to have been published in 22 livraisons of 6 pll. each. Prêtre pinx. Bouquet sculp. Langlois imp.

"C'est donc cet Ouvrage, fruit d'une longue suite de recherches sur les mœurs et le genre de vie des Oiseaux de l'Amérique septentrionale et de Saint-Domingue, que je présente au public. Il contient l'histoire de près de quatre cents espèces, dont cinquante au moins sont nouvelles, et dont environ cent soixante n'ont point été décrites par Catesby, Edwards et Buffon." (Avertissement.) Plusieures de ces espèces tiennent la priorité sur celles décrites par Wilson

1807. VIEILLOT, L. P.—Continued.

Les nouvelles espèces sont indiquées dans la liste suivante.—Vol. I. Pl. 1, becs de plusieures espèces. 2, Vultur urubu, n. s., p. 23. 2 *bis*, V. aura. 3, Aquila leucocephala. 3 *bis*, A. maculosa, n. s., p. 28. 4, A. piscatrix, n. s., p. 29. 5, Buteo fuscus, n. s., p. 31. 6, B. ferruginicaudus, n. s., p. 32. (B. gallinivorus, n. s., p. 33, no pl.) (B. fulvus, n. s., p. 34, no pl.) 7, Circus hiemalis. 8, C. europogistus. 9, C. hudsonius. (C. variegatus, n. s., p. 37, no pl.) 10, Milvus furcatus. 10 *bis*, Milvus cenchris, n. s., p. 38. 11, Tinnunculus columbarius. 12, 13, T. sparverius. 14, Accipiter striatus, n. s., p. 42. 14 *bis*, Accipiter ruficaudus, n. s., p. 43. 15, Strix phalaenoides. 16, S. nudipes. 17, S. nebulosa. 18, S. nyctea. 19, Bubo pinicola, n. s., p. 51. 20, B. clamator, n. s., p. 52. 21, B. asio. 22, B. nudipes, n. s., p. 53. (B. striatus, n. s., p. 54, no pl.) 23, Caprimulgus virginianus [= Antrostomus]. 24, C. popetue, n. s., p. 56. 25, C. rufus [Vieill., nec Bodd., = Antrost. carolinensis], p. 57. 26, 27, Hirundo caerulea, n. s., p. 57. 28, 29, H. dominicensis. 30, H. rufa, n. s., p. 60. 31, H. bicolor, n. s., p. 61. 32, H. fulva, n. s., p. 62. 33, H. pelasgia. 34, Muscicapa gilva, n. s., p. 65. 35, 36, M. ruticilla. 37, M. albicapilla, n. s., p. 66. 38, M. altiloqua, n. s., p. 67. 39, M. querula, n. s., p. 68. 40, M. fusca. 41, M. flava, n. s., p. 69. 42, M. armillata, n. s., p. 69. (M. flaviventris, n. s., p. 70, no pl.) 43, Tyrannus savana, n. s., p. 72. 44, T. pipiri, n. s., p. 73. 45, T. ludovicianus, n. s., p. 75. 46, T. griseus, n. s., p. 76. 47, T. sulphuratus. 48, T. atricapillus, n. s., p. 78. 49, T. canadensis. 50, Lanius borealis, n. s., p. 80. 51, L. ardosiacus, n. s., p. 81. 52, Vireo musicus, n. s., p. 83. 53, V. virescens, n. s., p. 84. 54, V. flavifrons, n. s., p. 85. 55, Icteria dumicola, n. s., p. 85. 56, Todus viridis. 57, Bombycilla cedrorum, n. s., p. 88.—Vol. II. Pl. 57 *bis*, Turdus fuscatus, n. s., p. 1. 58, T. plumbeus. 59, T. rufus. 60, 61, T. migratorius. 62, T. mustelinus. 63, T. minor "Gm." [+ fuscus "Gm."]. 64, T. coronatus, n. s., p. 8. 65, T. motacilla, n. s., p. 9. 66, T. nævius. 67, T. felivox, n. s., p. 10. 68, T. orpheus. 68 *bis*, T. gilvus, n. s., p. 15. 69, 70, T. palmarum. 71, Sylvia russeicauda, n. s., p. 17. 72, S. pensilis. 73, S. palmarum. 74, S. velata, n. s., p. 22. 75, 76, S. striata. 77, S. mitrata. 78, 79, S. coronata. 80, S. cœrulescens. 81, S. æquinoctialis. 82, S. noveboracensis. 83, S. protonotarius. 84, S. leucoptera, n. s., p. 28. 85, 86, S. trichas. 87, S. griseicollis, n. s., p. 29. 88, S. cærulea. 89, S. flava, n. s., p. 31. 90, S. icterocephala. 90 *bis*, S. bicolor, n. s., p. 32. 91, S. petechia. 92, S. virens. 93, S. maculosa. 94, S. tigrina "Lath." 95, S. æstiva. 96, S. blackburniæ. 97, S. chrysoptera. 98, S. discolor. 99, S. torquata, n. s., p. 38. 100, S. pumilia, n. s., p. 39. 101, 102, 103, S. sialis. (S. virescens, n. s., p. 42, no pl.) (S. flavopygia, n. s., p. 47, no pl.) 104, 105, Regulus rubineus, n. s., p. 49. 106, R. cristatus [V., nec Lath.]. 107, Trogl. ædon, n. s., p. 52. 108, T. arundinaceus, n. s., p. 55. 109, Picus principalis. 110, P. pileatus. 111, P. cinnamomeus. 112, 113, P. erythrocephalus. 114, P. striatus. 115, P. passerina. 116, P. griseus, n. s., p. 62. 117, P. rubidicollis, n. s., p. 63. 118, 119, P. varius. 120, P. villosus. 121, P. pubescens. 122, P. borealis, n. s., p. 66. 123, P. auratus. (P. flaviventris, n. s., p. 67, no pl.) 124, P. hirsutus, n. s., p. 68. (P. undulatus, n. s., p. 69, no pl.)

1808–14. WILSON, A. American Ornithology; | or, | the Natural History | of the | Birds of the United States: | Illustrated with Plates | Engraved and Colored from Original Drawings taken from Nature. | By Alexander Wilson. | Vol. I [–IX]. | Philadelphia: | Published by Bradford and Inskeep. | Printed by Robert Carr [mut. mut.]. | — | 1808 [1810, 1811, 1811, 1812, 1812, 1813, 1814, 1814]. 9 vols., imp. 4to. Vol. I, 1808, pp. i–vi, 1–158, pll. 1–9. Vol. II, 1810, pp. iii–xii, 13–167, pll. 10–18. Vol. III, 1811, pp. iii–xvi, 17–120, pll. 19–27. Vol. IV, 1811, pp. iii–xii, 13–100, pll. 28–36. Vol. V, 1812, pp. iii–xii, 13–122, pll. 37–45. Vol. VI, 1812, pp. iii–xx, 13–102, pll. 46–54. Vol. VII, 1813, pp. iii–xii, 13–132, pll. 55–63. Vol. VIII, 1814, pp. i–xi, 13–146, pll. 64–72, woodcc. opp. pp. 117, 118. Vol. IX, 1814, pp. iii–lvii, 1 l., pp. 61–133, + 11 l., pll. 73–76.

Vol. I, 1808.—*Corvus cristatus*, pl. 1, f. 1; *Fringilla tristis*, f. 2; *Icterus baltimore*, f. 3; *Turdus melodus* (sp. n., p. 29), pl. 2, f. 1; *T. migratorius*, f. 2; *Sitta caro*

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linensis, f. 3; *Sitta varia* (Bartr.), p. 43, pl. 2, f. 4; *Picus auratus*, pl. 3, f. 1; *Emberiza americana*, f. 2; *Sylvia sialis*, f. 3; *Oriolus mutatus* (sp. n., p. 64), pl. 4, ♂ ♀, yg., egg; *Lanius excubitor*, pl. 5, f. 1; *Loxia enucleater*, f. 2; *Sylvia calendula* f. 3; *Alauda alpestris*, f. 4; *Sylvia marilandica* (sp. n., p. 88), pl. 6, f. 1; *Pipra polyglotta* (sp. n., p. 90), f. 2; *Tanagra æstiva*, f. 3, 4; *Fringilla cyanea*, f. 5; *Muscicapa ruticilla*, f. 6; *Ampelis americana* (sp. n., p. 107), pl. 7, f. 1; *Picus carolinus*, f. 2; *Muscicapa sylvicola* (sp. n., p. 117), f. 3; *Fringilla purpurea*, f. 4; *Certhia familiaris*, pl. 8, f. 1; *Sylvia regulus*, f. 2; House Wren (not here named binomially, but with ref. to *Motacilla domestica* Bartr.), f. 3; *Parus atricapillus*, f. 4; *P. bicolor*, f. 5; *Sylvia troglodytes?* [Winter Wren], f. 6; *Picus erythrocephalus*, pl. 9, f. 1; *P. varius*, f. 2; *P. villosus*, f. 3; *P. pubescens*, f. 4.

Vol. II, 1810.—*Turdus polyglottus*, pl. 10, f. 1, 2; *Trochilus colubris*, f. 3, 4; *Emberiza erythropthalma* [*sic*], f. 5, 6; *Loxia cardinalis*, pl. 11, f. 1, 2; *Tanagra rubra*, f. 3, 4; *Emberiza oryzivora*, pl. 12, f. 1, 2; *Sylvia* [*Vireo*] *olivacea*, f. 3 (text disagrees); *Certhia palustris* (sp. n. [Bartram], p. 58), f. 4; *C. caroliniana*, sp. n. (Bartr.), p. 61, f. 5; *Sylvia flavicollis*, f. 6; *Lanius tyrannus*, pl. 13, f. 1; *Muscicapa crinita*, f. 2; *M. querula* (sp. n., p. 77), f. 3; *M. nuniciola* (sp. n. [Bartr.], p. 78), f. 4; *M. rapax* (sp. n., p. 81), f. 5; *Turdus rufus*, pl. 14, f. 1; *T. aurocapilla*, f. 2; *T. lividus* (sp. n., p. 90), f. 3; *Sylvia castanea* (sp. n., p. 97), f. 4; *S. pennsylvanica*, f. 5; *S. philadelphia* (sp. n., p. 101), f. 6; *Picus querulus* (sp. n., p. 103), pl. 15, f. 1; *Sitta pusilla* (sp. n., p. 105), f. 2; *Falco columbarius*, f. 3; *Sylvia solitaria* (sp. n., p. 109), f. 4; *S. citrinella* (sp. n., p. 111), f. 5; *S. chrysoptera*, f. 6; *S. canadensis*, f. 67; *Falco sparverius*, pl. 16, f. 1; *Fringilla pusilla* (sp. n., p. 121), f. 2; *F. arborea* (sp. n., p. 123), f. 3; *F. melodia* (sp. n., p. 125), f. 4; *F. socialis* (sp. n., p. 127), f. 5; *F. nivalis* (sp. n. (Bartr.), p. 129), f. 6; *F. pinus* (sp. n., p. 133, Bartr.), pl. 17, f. 1; *Loxia rosea* (sp. n., p. 135), f. 2; *Sylvia virens*, f. 3; *S. coronata*, f. 4; *S. cerulea* (sp. n., p. 141), f. 5; *Muscicapa solitaria* (sp. n., p. 143), f. 6; *Emberiza pecoris*, pl. 18, f. 1, 2, 3; *Sylvia marilandica*, ♀, f. 4; *Muscicapa cærulea*, f. 5; *M. cantatrix* (sp. n. (Bartr.), p. 166), f. 6.

Vol. III, 1811.—*Strix nævia*, pl. 19, f. 1; *Alauda magna*, f. 2; *Certhia maculata* (sp. n., p. 23), f. 3; *Sylvia pinus*, f. 4; *Tanagra ludoviciana* (sp. n., p. 27), pl. 20, f. 1; *Corvus columbianus* (sp. n., p. 29), f. 2; *Picus torquatus* (sp. n., p. 31), f. 3; *Corvus canadensis*, pl. 21, f. 1; *Emberiza nivalis*, f. 2; *Gracula ferruginea*, f. 3; *Gracula quiscala*, f. 4; *Fringilla palustris* (Bartr.) (sp. n., p. 49), pl. 22, f. 1; *F. albicollis*, f. 2; *F. rufa* (Bartr.) (sp. n., p. 53), f. 4; *F. savanna* (sp. n., p. 55), f. 3; *Lanius carolinensis* (sp. n., p. 57), f. 5; *Alcedo alcyon*, pl. 23, f. 1; *Sylvia magnolia* (sp. n., p. 63), f. 2; *S. blackburnia*, f. 3; *S. autumnalis* (sp. n., p. 65), f. 4; *Turdus aquaticus* (sp. n., p. 66), f. 5; *Emberiza ciris*, pl. 24, f. 1, 2; *Sylvia protonotarius*, f. 3; *S. vermivora*, f. 4; *Fringilla passerina*, f. 5; *Loxia cærulea*, f. 6; *Falco misisippiensis* (sp. n., p. 80), pl. 25, f. 1; *Sylvia peregrina* (sp. n., p. 83), f. 2; *S. formosa* (sp. n., p. 85), f. 3; *S. minuta* (sp. n., p. 87), f. 4; *Psittacus carolinensis*, pl. 26, f. 1; *Muscicapa canadensis*, f. 2; *M. cucullata*, f. 3; *M. pusilla* (sp. n., p. 103), f. 4; *Tetrao cupido*, pl. 27, f. 1; *Sylvia rara* (sp. n., p. 119), f. 2; *S. ruficapilla*, f. 3.

Vol. IV, 1811.—*Cuculus carolinensis* (sp. n. [Bartr.], p. 13), pl. 28, f. 1; *C. erythropthalma* [*sic*] (sp. n., p. 14), f. 2; *Sylvia pusilla* (sp. n., p. 17), f. 3; *S. petechia*, f. 4; *Picus principalis*, pl. 29, f. 1; *P. pileatus*, f. 2 (text disagrees); *Sturnus predatorius* (sp. n. [Bartr.], p. 30), pl. 30, f. 1, 2; *Sylvia striata*, f. 3; *Fringilla linaria*, f. 4; *Curvirostra americana*, pl. 31, f. 1, 2; *C. leucoptera*, f. 3; *Emberiza leucophrys*, f. 4; *E. graminea*, f. 5; *Strix nyctea*, pl. 32, f. 1; *Falco sparverius*, f. 2; *Falco lagopus*, pl. 33, f. 1; *Strix nebulosa*, f. 2; *S. brachyotos*, f. 3; *Strix passerina*, pl. 34, f. 1; *Fringilla maritima* (sp. n., p. 68), f. 2; *F. caudacuta*, f. 3; *F. savanna*, f. 4; *Falco hyemalis*, pl. 35, f. 1; *Corvus pica*, f. 2; *C. corone*, f. 3; *Falco leucocephalus*, pl. 36.

Vol. V, 1812.—*Falco haliætus*, pl. 37, f. 1; *Corvus ossifragus* (sp. n., p. 27), f. 2; *Charadrius hiaticula*, f. 3; *Tringa pusilla*, f. 4; *Hirundo americana* (sp. n., p. 34), f. 1, 2; *H. viridis* (sp. n., p. 44), f. 3; *H. riparia*, f. 4; *H. pelasgia*, pl. 39, f. 1; *H. purpurea*, f. 2, 3; *Sylvia agilis* (sp. n., p. 64), f. 4; *Caprimulgus americanus* (sp. n., p. 65), pl. 40, f. 1, 2; *Caprimulgus vociferus* (sp. n., p. 71), pl. 41, f. 1, 2, 3; *Strix asio*, pl. 42, f. 1; *Muscicapa melodia* (sp. n., p. 85), f. 2; *Fringilla purpurea*, f. 3; *Alauda rufa*, f. 4; *Columba carolinensis*, pl. 43, f. 1; *Turdus solitarius* (sp. n., p. 95), f. 2; *T. mustelinus* (*nec* Gm., sp. n., p. 98), f. 3; *Sylvia pusilla* (sp. n., p. 100), f. 4; *Columba migratoria*, pl. 44, f. 1; *Sylvia montana* (sp. n., p. 113—never has been iden-

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tified—is it not young *D. virens?*), f. 2; *S. parus* (sp. n., p. 114), f. 3; *Falco velox*, pl. 45, f. 1; *Muscicapa ruticilla*, f. 2; *Sylvia coronata*, f. 3.

Vol. VI, 1812.—Preface contains a "List of the Land Birds of the United States, with their generic characters, according to the arrangement of Latham". In a few cases, the names do not agree with those in the text. The list is stated to indicate the new species by italics; but it does not thus mark the many old species to which Wilson gave new names, and which are thus *de jure* new.—*Falco pennsylvanicus* (sp. n., p. 13), pl. 46, f. 1 (this is *Accipiter*, afterward *cooperi* Bp., not *Buteo*); *Columba passerina*, f. 2, 3; *Scolopax gallinago*, pl. 47, f. 1; *Tetrao virginianus*, f. 2; *Rallus virginianus* [= *Porzana carolina*], pl. 48, f. 1; *Scolopax minor*, f. 2; *Tetrao umbellus*, pl. 49; *Strix virginiana*, pl. 50, f. 1; *S. flammea*, f. 2; *Muscicapa minuta*, f. 5 (sp. n., p. 62—never identified); *Strix hudsonia*, f. 6 (figs. 3 and 4 of this plate are quadrupeds); *Falco uliginosus*, pl. 51, f. 1; *Falco furcatus*, f. 2; *Strix otus*, f. 3; *Falco borealis*, pl. 52, f. 1; *F. leverianus?*, f. 2 (young of *borealis*); *F. atricapillus* (sp. n., p. 80), f. 3; *F. niger* (sp. n., p. 80), pl. 53, f. 1; var., f. 2; *F. lineatus*, f. 3; *Oriolus baltimorus*, f. 4; *Emberiza erythropthalma* [*sic*], f. 4; *Falco pennsylvanicus bis*, pl. 54, f. 1 (this is the *Buteo*—not the *Accipiter* which is also called *pennsylvanicus* earlier in this volume); *Caprimulgus carolinensis*, f. 2; *Sylvia maritima* (sp. n., p. 99), f. 3; *S. striata*, f. 4.

Vol. VII, 1813—the last published by the author himself.—*Falco fulvus*, pl. 55, f. 1; *Falco ossifragus*, f. 2; *Scolopax borealis* (*nec* Lath., sp. n., p. 22), pl. 56, f. 1; *Tringa alpina*, f. 2; *Scolopax semi-palmata*, f. 3; *S. fedoa*, f. 4; *Tringa interpres*, pl. 57, f. 1; *T. cinerea*, f. 2; *T. cinclus*, f. 3; *Charadrius apricarius*, f. 4; *Tringa rufa* (sp. n., p. 43), f. 5; *Scolopax noveboracensis*, p. 58, f. 1; *Recurvirostra himantopus*, f. 2; *Tringa solitaria* (sp. n., p. 53), f. 3; *Scolopax flavipes*, f. 4; *S. vociferus* (sp. n., p. 57), f. 5; *Tringa macularia*, pl. 59, f. 1; *T. bartramia* (sp. n., p. 63), f. 2; *T. hiaticula* f. 3; *Charadrius calidris*, f. 4; *C. pluvialis*, f. 5; *C. vocifera*, f. 6; *Sterna hirundo*, pl. 60, f. 1; *S. minuta*, f. 2; *S. plumbea* (sp. n., p. 83), f. 3; *Rhynchops nigra*, f. 4; *Procellaria pelagica*, f. 6—there is no fig. 5; *Ardea virescens*, pl. 61, f. 1; *A. nycticorax*, f. 2, 3; *A. egretta*, f. 4; *Rallus virginianus bis*, pl. 62, f. 1 (this is rightly so named); *R. crepitans*, f. 2; *Ardea cærulea*, f. 3; *A. candidissima*, f. 4; *Platalea ajaja*, pl. 63, f. 1; *Recurvirostra americana*, f. 2; *Charadrius rubidus* (sp. n., p. 129), f. 3; *Tringa semipalmata* (sp. n., p. 131), f. 4.

Vol. VIII, 1814—"which was left unfinished by its ingenious and indefatigable author", and appeared under the editorship of G. Ord, who furnished the preface. "The historical part of the present volume was fully completed and printed off; and all the plates, except one, were engraved, under the superintendence of the author himself."—*Ardea ludoviciana* (sp. n., p. 13), pl. 64, f. 1; *Haematopus ostrolegus*, f. 2; *Ardea* [*Grus*] *americana*, f. 3; *Numenius longirostra* (sp. n., p. 23), f. 4; *Ardea violacea*, pl. 65, f. 1; *A. herodias*, f. 2; *A. minor*, f. 3; *A. exilis*, f. 4; *Tantalus loculator*, pl. 66, f. 1; *T. ruber*, f. 2; *T. albus*, f. 3; *Phoenicopteros ruber*, f. 4; *Anas perspicillata*, pl. 67, f. 1; *A. albeola*, f. 2, 3; *Anas canadensis*, f. 4; *A. fuligula*, f. 5; *A. clangula*, f. 6; *A. clypeata*, f. 7; *Mergus merganser*, pl. 68, f. 1, 2; *Anas acuta*, f. 3; *A. discors*, f. 4; *A. hyperborea*, f. 5; *Mergus cucullatus*, pl. 69, f. 1; *M. serrator*, f. 2; *Anas marila*, f. 3; *A. americana*, f. 4; *A. hyperborea*, yg., f. 5; *A. labradora*, f. 6; *A. glacialis*, pl. 70, f. 1, 2; *A. sponsa*, f. 3; *A. crecca*, f. 4; *A. valisineria* ([*sic*], sp. n., p. 103), f. 5; *A. ferina?*, f. 6; *A. boschas*, f. 7; *A. strepera*, pl. 71, f. 1; *A. mollissima*, f. 2, 3; *Mergus albellus*, f. 4; *Anas rubidus* (sp. n., p. 128), f. 5, 6; *A. bernicla*, pl. 72, f. 1; *A. nigra*, f. 2; *A. fusca*, f. 3; *A. histrionica*, f. 4; *A. obscura*, f. 5; *Sterna aranea* (sp. n., p. 143), f. 6; *S. fuliginosa*, f. 7.

Vol. IX, 1814—published, like VIII, under editorship of G. Ord, who signed the preface, and furnished the "Biographical Sketch of Alexander Wilson", pp. xiii–xlviii. A "List of the Water Birds of the United States, with their generic Characters, according to the arrangement of Latham", follows (pp. xlix–lvii).—*Fulica atra* (sp. n., p. 61), pl. 73, f. 1; *Gallinula porphyrio*, f. 2; *Phalaropus lobata*, f. 3; *Phalaropus hyperborea*, f. 4; *Charadrius Wilsonia* (Ord, sp. n., p. 77), f. 5; *Plotus melanogaster*, pl. 74, f. 1, 2; *Colymbus glacialis*, f. 3; *Larus rudibundus*, f. 4; *Alca alle*, f. 5; *Vultur aura*, pl. 75, f. 1; *Vultur atratus*, f. 2; *Corvus corax*, f. 3; *Falco peregrinus*, pl. 76. (*Fringilla linaria*, ref. to pl. 333, f. 4; *Falco leuco-*

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cephalus, ref. to pl. 36; *Mergus merganser*, ref. to pl. 68, f. 1.) "General Index" and "List of Subscribers" conclude the volume and the work. It is *not* necessary, though often done, to call this work Wilson's Ornithology "with Ord's Continuation". Wilson's work was simply completed under Ord's editorship, but the latter did not "continue" it. Some of the text in vol. VIII, and IX, are by Ord, but the editor himself would have been the last person to claim joint-authorship.

No other work on American ornithology has been so much talked and written about as this; and the time for comment on its character is long gone by. The "melancholy poet-naturalist" occupies a place as changeless as the hills, and wholly peculiar. He stands toward American ornithologists in a position corresponding somewhat to that which is occupied in England by White of Selbourne, in Germany by Bechstein, and, I will add, among anglers by Izaak Walton. Perhaps no other work on ornithology of equal extent is equally free from error; and its truthfulness is illumined by a spark of the "fire divine". This means immortality. Among the disproportionately large number of new species described by Wilson, there are but two (*Sylvia montana* and *Muscicapa minuta*) remaining unidentified. Being no scholar, in fact a very unlearned man, he labored under the usual disadvantage of insufficient knowledge of his predecessors' labors; consequently he renamed many species as new which were not such, and wrongly referred many that were new to previously described ones. Science would lose little, but, on the contrary, would gain much, if every scrap of pre-Wilsonian writing about United States birds could be annihilated.

What is, or at least long was, the most valuable commentary on "Wilson", is Bonaparte's "Observations on the Nomenclature of Wilson's Ornithology" (1824–25 and 1826, *q. v.*). The total number of species described and figured by Wilson is said to be 278.

There are said to be, and there doubtless are, a "Supplement" by Ord, "Phila. 1825", and a "2d ed., Phila. 1824–28, 3 vols. 4to"; neither of which have I seen.

The editions and continuations of "Wilson" which have come to my knowledge are as follows:—

1808–14. WILSON: *editio princeps*, as given above. 9 vols. 4to. Philadelphia.

1825–33. BONAPARTE: *American Ornithology*. 4 vols. 4to. New York. An entirely different work, but in similar style, and incorporated by subsequent editors with "Wilson".

1828–29. ORD'S *ed.* 3 vols. 8vo. 1 folio atlas. New York and Philadelphia. Does not contain "Bonaparte". *There are later issues of this.*

1831. JAMESON'S *ed.*, forming part of Constable's Miscellany. 4 vols. 18mo. Edinburgh. Contains "Bonaparte", and much irrelevant matter.

1832. JARDINE'S *ed.* 3 vols. 8vo. London and Edinburgh. Contains "Bonaparte".

1840. BREWER'S *ed.* 1 vol. 12mo. Boston. Contains "Bonaparte", and an original synopsis by the editor. There are later issues of this.

—— (date unknown). EDITOR *unknown*. An edition published in London, by W. Spooner. 16mo? 18mo? No. 1, containing 8 plates. (1840 or later?)

18—. WILSON, A. American Ornithology. | Illustrations | of | American Ornithology; | reduced from the | original work of Alexander Wilson. | London: | published by William Spooner, 259, Regent Street, | Oxford Street; | Hurst, Chance, and Co., 65 St. Paul's Church-Yard; | and Constable and Co., Edinburgh. | [No date.] 16mo? 18mo? (say 4 × 6 inches). No. 1, containing 8 plates.

I am favored, through the attentions of my friend Prof. A. Newton, of Cambridge, England, with the above title of an edition of Wilson I never otherwise heard of. Prof. N. has no further information to convey respecting it. It would seem to indicate an undertaking, which may not have been carried out to completion, of an edition of the work (but this is only a guess of mine, quite in the dark). Will any bibliomaniac or sane person resolve the uncertainty?

1809. WILLIAMS, S. The | Natural and Civil | History | of | Vermont. | — | By Samuel Williams, LL. D. | Member of the Meteorological Society in Germany, of the Philosophical Society in Philadelphia, and of the | Academy of Arts and Sciences in Massachusetts. | — | In two volumes. | :::::: | Volume I [II]. | ::::: | The second edition, corrected and | much enlarged. | — | Burlington, Vt. | Printed by Samuel Mills. | Sold at his Bookstore in Burlington, by Mills and White, | Middlebury, Isaiah Thomas, Jun. Worcester, Thomas | and Andrews, Boston, Thomas and Whipple and | S. Sawyer and Co. Newburyport. | ..... | 1809. 2 vols. 12mo size, but only 4 ll. to a sig. Vol. I, map, pp. 1–514, 1 l. Vol. II, pp. 1–487 + 1 p.

Orig. ed., 1794, *q. v.* Vol. I, Chap. VI, pp. 98–159, Birds, pp. 134–146. A cursory account, in which the birds are treated by lists in several categories, as "birds of passage", "singing birds", "water fowl", and those "which do not fall under either of the above descriptions" (!). There are also miscellaneous accounts of several species, as the Snow Bird [*Junco hyemalis*], Wild Goose, Passenger Pigeon, and especially sundry kinds of Swallows—direct and circumstantial evidence being offered of the subaqueous torpidity of Swallows, and of the hibernation of the Chimney "Swallow" [*Chætura pelagica*] in hollow trees. "From these accounts," says the author, referring to what he has just narrated, "I am led to believe that the house swallow [by which he means the *Chætura*] generally resides during the winter, in the hollow of trees; and that the ground swallows [*Cotyle riparia*], find security in the mud, at the bottom of lakes, rivers, and ponds" (p. 143).

1812. KALM, P. Travels into North America; | containing | its Natural History, and a circumstantial account of its | plantations and agriculture in general, | . . . . < *Pinkerton's Voyages*, vol. xiii, pp. 374–700. 4to. London, 1812.

This is from the 2d London ed., Forster's translation, 2 vols. 8vo, 1772.—See above for various earlier eds., 1753–61, 1754–64, 1770–71, 1772.

1814. LEWIS, M., *and* CLARKE, W. History | of | The Expedition | under the command of | Captains Lewis and Clark, | to | the sources of the Missouri, | thence | across the Rocky Mountains | and down the | River Columbia to the Pacific Ocean. | Performed during the years 1804–5–6. | By order of the | Government of the United States. | Prepared for the press | by Paul Allen, Esquire. | In two Volumes. | Vol. I [II]. | Philadelphia: | Published by Bradford and Inskeep; and | Abm. H. Inskeep, Newyork. | J. Maxwell, Printer. | 1814. 2 vols. 8vo. Vol. I, pp. i–xxviii, 1–470, maps. Vol. II, pp. i–ix, 1–522, maps. > Vol. II, Chap. VII, "A general description of the beasts, birds, and plants, &c. found by the party in this expedition," pp. 148–201.

This is the *editio princeps* of the authentic narrative.—See especially COUES, *Bull. U. S. Geol. and Geogr. Surv. Terr., 2d ser., No. 6, Feb. 8*, 1876, pp. 417–444, giving an account of the books of this series, and a commentary on the zoology they contain. There are sundry accounts of birds, *passim*, in these volumes; and a formal notice of the birds at the place above marked. None of the species are given under technical names; but here we have the first accounts of various species, subsequently, in 1815, named by G. Ord, in Guthrie's Geography. See beyond for various later editions and versions of this work, under 1814, 1815, 1816–18, 1817, and 1842–75.

1814. LEWIS, M., *and* CLARKE, W. Travels | to the | Source of the Missouri River | and across the | American Continent | to the | Pacific Ocean.

1814. LEWIS M., *and* CLARKE, W.—Continued.

| Performed | by order of the Government of the United States, | in the Years 1804, 1805, and 1806. | — | By Captains Lewis and Clarke. | — | Published from the Official Report, | and | illustrated by a map of the route, | and other maps. | — | London: Printed for Longman, Hurst, Rees, Orme, and Brown, | Paternoster-Row. | — | 1814. 1 vol. 4to. pp. i–xxiv, 1–663, 1 folding and 2 full-page maps. >Chap. XXIV, "A general Description of the Beasts, Birds, and Plants, &c., found by the Party in this Expedition," pp. 450–489.

"The present edition is printed nearly verbatim from the original; the sheets of which were forwarded to this country by the American proprietors: the only liberty that has been taken with the language, has been merely the correction of a few inadvertent grammatical or typographical errors. The American copy contained an Appendix drawn up by Captain Lewis on the State of the Indian Nations; . . . . but as the subject is altogether of a local nature, and the observations possess little interest for the British reader, it has been omitted." Besides the whole of the Appendix, which occupies 89 pages of the original, the Life of Lewis and the American editor's Preface are also omitted; in place of the latter being introduced a new preface by the English editor. Excepting these points and those mentioned above in quotation-marks, this English 4to ed. is identical with the original 2 vol. 8vo American one, *q. v.*

1815. CLINTON, DE WITT. An Introductory Discourse delivered on the 4th of May, 1814. <*Trans. Lit. & Philos. Soc. New York*, i, 1815, pp. 21–184.

The character of the discourse may be inferred from the man and the occasion. The paper is ornithological at pp. 60–63, and in the following particulars:—Note R, pp. 121–125, review of Wilson's Ornithology and eulogy of its author. Note S, pp. 125–128, on the origin of the Turkey, and on the plumages and migrations of the Bobolink. Note T, p. 129, on the Raven. Note V, pp. 131–133, on the migration of birds. Note W, estimates of the total number of birds known. Note X, pp. 134–137, on various birds which are or may be domesticated for useful or ornamental purposes.

1815. LEWIS, M., *and* CLARKE, W. Travels | to the source of | the Missouri River | and across the | American Continent | to | the Pacific Ocean. | Performed by order of | the Government of the United States, | in the years 1804, 1805, and 1806. | — | By Captains Lewis and Clarke. | — | Published from the Official Report, | and illustrated by a map of the route, | and other maps. | — | A new edition, in three volumes. | Vol. I [II, III]. | — | London: | Printed for Longman, Hurst, Rees, Orme, and Brown, | Paternoster-Row. | 1815. 3 vols. 8vo. Vol. I, pp. i–xxvi, 1 l. not paged, 1–411, 3 maps. Vol. II, pp. i–xii, 1–434, 3 maps. Vol. III, pp. i–xii, 1–394. >Vol. III, Chap. XXIV, "A general description of the beasts, birds, plants, &c., found by the party in this expedition," pp. 1–73.

Except in form, and in some minor details of typography incident to resetting of the type, this is identical with the 4to ed. of 1814. This edition, convenient in form, and otherwise unexceptionable, is a favorite one, perhaps oftener met with, even in this country, than the original of 1814. It was reissued under date of 1817, apparently from the same plates; though I observe, on the last two pages of vol. I, a slight discrepancy in the set of the type.

1815. LEWIS, M., *and* CLARKE, W. "Tagebuch e. Entdeckungsreise durch Nord-Amerika in d. Jahren 1804–6. Aus d. Engl. v. Weyland. Mit 1 Karte." <*Neue Bibliothek der wichtigsten Beschreibungen u. s. w.* (Weimar, gr.-8°, Bd. I, 1815).

Title of a German version, quoted from Kayser. See the original, 1814.

1815. ORD, G. A New | Geographical, Historical, | and | Commercial Grammar; | and present state of the | several Kingdoms of the world. | Containing | . . . . | to which are added | . . . . | *Second American Edition.* Philadelphia. Johnson & Warner. 1815. "2 vols." 8vo. Vol. II, 2 p. ll. (title and contents), pp. 603, maps. > Ornithology. pp. 313–357.

Above title defective after the first two lines, the only copy I ever handled having part of the title-page torn off.

This edition of "Guthrie's Geography" contains articles, important in some respects, on the zoology of North America, by George Ord. The work does not appear to be common, and the zoological articles can scarcely be said to have come into current quotation until 1857–58, when S. F. Baird's citation and necessary adoption of some of Ord's names called attention to them. The ornithological portion consists of a bare list of vernacular and binomial names, apparently compiled from Turton's (at any rate, from some) edition of Linnæus, with addition of two new species, and a few others described by Lewis and Clarke. To these latter, scientific names are now for the first time given. This list, pp. 315–319, is followed, pp. 320–357, with biographical sketches of a number of leading species (under vernacular names only), mainly drawn directly from Wilson, and is preceded, pp. 313–315, by a few general remarks, chiefly from the same source. The following are the "new species":—*Vultur columbianus*, p. 315 (Lewis and Clark, ii, 183); *Falco cæsius*, p. 315 (no description or reference); *Picus montanus*, p. 316 (L. & C., i, 398); *Phasianus columbianus*, p. 317 (L. & C., ii, 180); *Tetrao phasianellus*, p. 317 (L. & C., ii, 181); *T. furca*, p. 317 (L. & C., ii, 182); *Sterna philadelphia* and *Larus delawarensis*, p. 319, *descrr. origg.*; *Anas columbianus*, p. 319 (L. & C., ii, 192). The last named is a *Cygnus*. The list contains, besides numerous nominal species of the older writers, quite a number that are certainly not North American.

1816–18. LEWIS, M., *and* CLARKE, W. Reize | naar | de Bronnen van den Missouri, | en door het vaste land van America | nar de Zuidzee. | Gedaan op last van de regering der Vereenigde Staten van America, | in de jaren 1804, 1805 en 1806. | Door de Kapiteins | Lewis en Clarke. | Met eene kaart. | — | Uit het Engelsch vertaald door | N. G. Van Kampen. | — | Eerste, [tweede, derde en laatste,] deel. | * | Te Dordrecht, | bij A. Blussé & Zoon, | 1816 [1817, 1818]. 3 vols. 8vo. Vol. I, 1816, pp. i–xxxii, 1–398, map. Vol. II, 1817, pp. i–viii, 1–390. Vol. III, 1818, pp. i–xii, 1–335.

This appears to be a fair and complete version, probably made from the London 3-vol. ed. of 1815, *q. v.*

1817. BRADBURY, J. Travels | in | the interior of America, | in the | Years 1809, 1810, and 1811; | including | a description of Upper Louisiana, | together with | the States of Ohio, Kentucky, Indiana, and | Tennessee, | with the | Illinois and Western Territories, | and containing | remarks and observations | useful | to | persons emigrating to those countries. | — | By John Bradbury, F. L. S. London, | [etc.] | — | Liverpool: | printed for the author, | By Smith and Galway, | and published by Sherwood, Neely, and Jones, London. | — | 1817. 1 vol. 8vo. pp. i–xii, 9–364.

Very slightly ornithological *passim*; Wood Pigeon described, p. 44.

1817. LEWIS, M., *and* CLARKE, W. Travels, etc.

Merely a reissue of the 3-vol. 8vo London ed. of 1815, *q. v.*

1817. LEWIS, M., *and* CLARKE, W. Travels, etc.

An Irish ed. of the work, which I have not seen; "2 vols. 8°, Dublin, J. Christie, 1817." Said to be like the original.

1818. O'Reilly, B. Greenland, | the | Adjacent Seas, | and | the North-west Passage | to | The Pacific Ocean, | illustrated in a voyage to Davis's Strait, | during the Summer of 1817. | — | With charts and numerous plates, | from drawings of the author taken on the spot. | — | By | Bernard O'Reilly, Esq. | — | London : | printed for Baldwin, Cradock, and Joy, | 47, Paternoster-Row. | — | 1818. 1 vol. 4to. pp. viij, 293, pll.

I have nowhere seen this work cited in ornithology; nevertheless, it gives a formal account (pp. 135–147) of various (15 spp.) birds, several of which are described as new, and figured; the narrative portion of the work, moreover, abounds with allusions to birds. Pl. xii, f. 2, *Procellaria glacialis;* p. 140, pl. xii, f. 1, *Procellaria gravis*, n. sp. (= *Puffinus* ——); p. 141, pl. xiii, *Larus maximus*, n. sp. (= *L. glaucus*); pl. xiv, f. 2, *Colymbus grylle;* p. 146, pl. xiv, f. 1, *Colymbus glocitans*, n. sp. (= *Mergulus alle*).

1818. Rafinesque, C. S. Further Account of Discoveries in Natural History, in the Western States, by Constantine Samuel Rafinesque, Esq. communicated in a Letter from that Gentleman to the Editor. < *Am. Monthly Mag.*, iv, 1818, pp. 39–42.

The only ornithological matter is *Rimamphus* (usually quoted *Rhimanphus*) *citrinus*, gen. sp. n., p. 41, supposed to be the *Motacilla æstiva* Gm.

1818. Rafinesque, C. S. General Account of the Discoveries made in the Zoology of the Western States. < *Am. Monthly Mag.*, iv, 1818, pp. 106, 107.

On p. 106 are named, but not described, *Ramphosteon* and *Symphemia*, genn. nn.

1818. Sabine, E. A Memoir on the Birds of Greenland; with Descriptions and Notes on the Species observed in the late Voyage of Discovery in Davis's Straits and Baffin's Bay. < *Trans. Linn. Soc.*, xii, pt. ii, 1818, pp. 527–559, pl. 30.

A notable paper, well known and often cited, giving extended field-notes, descriptions, synonymy, etc., of 28 spp. Concordance of the 54 spp. given by Fabricius. Tracheæ of *Somateria spectabilis* and *Anas glacialis* figured, pl. 30.

1819. [Anon.] Americanische Ornithologie, oder Naturgeschichte der Vögel der vereinten Staaten. Mit nach der Natur gestochenen und ausgemalten Kupfern; von Alex. Wilson. 9 Bde in Folio. Philadelphia. 1809 bis 1814. (Bibl. univ. 18.) < *Oken's Isis*, Jahrg. iii, 1819, pp. 116–130.

An extended editorial notice.

1819. Leach, W. E. Notice of some Animals from the Arctic Regions. < *Thomson's Annals of Philos.*, xiii, 1819, pp. 60, 61.

Aves, p. 61. A "hasty list" (the author says) of 23 spp., among them *Grylle scapularis*, *Uria francsii*, spp. nn. Leach introduces the Fork-tailed Gull in the following letters and figures:—"19. ——— ? Sabini.—A paper on this bird (which forms an intermediate genus between *Larus* and *Sterna*) has been read to the Linnean Society, by Joseph Sabine, Esq. who named it *Larus sabini*, after his brother who first killed it." He also says in a foot-note, "See Linnæan Society report, p. 67." This may be actually the first publication of the species, though it appears to have been first formally described and figured in *Trans. Linn. Soc.* xii, 1818, 520, pl. 29.

1819. Rafinesque, C. S. Prodrome de 70 Nouveaux genres d'animaux découverts dans l'intérieur des États-Unis d'Amérique durant l'année 1818. < *Journ. de Phys. Chim. et d'Hist. Nat.*, lxxxviii, juin 1819, p. 417, *seq.*

Not seen—cited from Baird. Genera *Rimamphus. Helmitheros, Symphemia.*

1819. Ross, J.? A | Voyage of Discovery, | made under the orders of the Admiralty, | in | His Majesty's ships | Isabella and Alexander, | for the purpose of | exploring Baffin's Bay, | and inquiring into the probability of a | Northwest Passage. | — | By John Ross, K. S. Captain Royal Navy. | — | London: | — | John Murray, Albemarle-street. | — | 1819. 1 vol. 4to. 2 p. ll., pp. i–xl, 1–252, 1 l., pp. i–cxxxvi, maps, plates.

Appendix II, pp. xlviii–lx, contains an article on the birds observed, about 20 in number. The authorship is not clear. Ross acknowledges his indebtedness "for the article" to J. Edwards and C. J. Beverley, respectively surgeon and assistant surgeon of the 'Isabella'; but the birds are apparently treated by E. or J. Sabine and W. E. Leach. *Grylle scapularis* "Leach", p. li; *Uria francsii* "Leach", p. lii; *Xema* ("Leach", but named first in 1818) *sabini* "Sabine", "nondescript", p. lvii, *plate* (but with reference to *Thomson's Ann. of Philos.*, vol. xiii), are described as if spp. nn., but were named elsewhere earlier.

1819. Scoresby, W., Jun. Narrative of an Excursion upon the Island of Jan Mayen; containing some Account of its Appearance and Productions. < *Edinb. Philos. Journ.*, i, 1819, pp. 121–126.

Contains slight allusions to the birds.

1820. [Anon.] Die Expedition des Kapitäns Ross zu Erforschung der Baffinsbai und Untersuchung der Möglichkeit einer nordwestlichen Durchfahrt. < *Oken's Isis*, Jahrg. iv, 1820, *Litter. Anzeig.*, pp. 120–127.

Bemerkungen des Herausgebers, nebst des Leach'schen Verzeichnisses von 25 Arten, pp. 115–119, mit Anmerkungen von dem Originale. *Grylle scapularis* Leach, p. 116; *Uria francsii* Leach, p. 116; *Xema sabini* Leach, p. 118.

1820. Crantz, D. The | History of Greenland: | including | an account of the Mission | carried on by the | United Brethren | in that country. | — | From the German of David Crantz. | — | With | a continuation to the present time; | illustrative notes; | and an appendix, containing a sketch of the Mission | of the brethren in Labrador. | — | [Quotation.] | — | In Two Volumes. | Vol. I [II]. | London: | printed for Longman, Hurst, Rees, Orme, and Brown, | Paternoster-row. | 1820. 8vo. Vol. I, frontisp., pp. xi, 359, map, plates. Vol. II, frontisp., pp. vi, 323.

Vol. I, Book II, Chap. I, pp. 66–84.—III. Land birds. IV. Different varieties of sea-fowl. V. First class, with spoon-shaped bills. VI. Second class, with short wings. VII. Third class, with long wings. VIII. Nourishment of sea-fowl and their propagation. This bird-matter occupies pp. 71–84, being a very respectable treatise on Greenland ornithology, considering when it was written; the species are readily identifiable, for the most part, and the remarks are those of an actual observer. This is a late edition; see 1765, and especially what is said at 1767; I am unable to make an actual comparison.

1820. Harmon, D. W. A | Journal | of | Voyages and Travels | in the | Interiour of North America, | between the 47th and 58th Degrees of Latitude, . . . [etc., 11 lines]. | Illustrated by a map of the country. | By Daniel Williams Harmon, | a Partner in the North West Company. | — | Andover: | Printed by Flagg and Gould. | 1820. 1 vol. sm. 8vo. pp. i–xxiii, 25–432, portrait, map.

Ends with "A concise account of the principal animals which are found in the northwestern part of North America", pp. 415–432; but this is confined to mammals, and the book is scarcely citable as to ornithology; still it contains some slight notices of birds, here and there.

1820. LEACH, [W. E.] Leach hat zu gleicher Zeit folgendes Verzeichniss in Thomson's Annals of Philosophy 1819. mitgetheilt. < *Oken's Isis*, Jahrg. iv, 1820, pp. 127, 128.

Die auf der des Kapitäns Ross Reise nach dem Nordpol gesammelten Vögeln; 22 Arten. Vergl. 1819, LEACH, W. E.

1820. [ORD, G.] A | Universal Geography; | or, | a view of the present state of | the known world. | Containing | . . . | To which are added, | . . . | Originally compiled | By William Guthrie, Esq. | The astronomical part by James Ferguson, F. R. S. | To which have been added | . . . | Accompanied with twenty-one correct maps. | Third American edition, | with extensive additions and alterations, by several American editors. | In Two Volumes—Vol. I [II]. | — | Philadelphia: | Published by Benjamin Warner, No. 171, High street. | . . . | — | 1820. 2 vols. 8vo. Vol. I, Title, Contents, (pp. i–iv), Adv. (1 l.), pp. 1–514. Vol. II, Title (1 l.), Contents (1 l.), pp. 9–640. 1 vol. of maps.

Vol. I, Zoology, pp. 141–189; Birds, pp. 155–187 —This matter consists of that given in the *second* ed., 1815, *q. v.*, but with the omission of the systematic lists, which represented the whole of the technical value of the matter. Ord's name does not appear in connection with this performance.

1822. MANBY, G. W. Journal | of a | Voyage to Greenland, | in the year 1821. | — | With graphic illustrations. | By George William Manby, E q. | — | London: | Printed for G. and W. B. Whittaker, | 13, Ave-Maria Lane. | 1822. pp. viii, 143, maps, pll., and woodcc.

Orig. ed.—see also 2d ed., 1823. Plate of *Lestris parasitica* opp. p. 90; cut of *Fratercula arctica* on p. 106.

1823. [ANON.] Journey to the shores of the Polar Sea; . . . par J. Franklin. . . . Appendice Zoologique; par J. Sabine, esq. . . . Londres; 1822. . . . < *Féruss. Bull.*, 2e sect., iii, 1823, pp. 406, 407.

Une revue anonyme de l'ouvrage; voir 1823, SABINE, J.

1823. CORMACK, W. E. Account of a Journey across the Island of Newfoundland. < *Edinb. Philos. Journ.*, x, 1823, pp. 156–162.

Mere allusion to some of the birds seen.

1823. MANBY, G. W. Journal | of a | Voyage to Greenland, | in the year 1821. | With graphic illustrations. | — | By George William Manby, Esq. | — | The Second Edition. | London: | Printed for G. and W. B. Whittaker, | Ave-maria Lane. | — | MDCCCXXIII. 1 vol. 8vo. pp. xi, 225, maps, pll., and woodcc.

Ornithological *passim*. Plate of *Lestris parasitica* facing p. 141. Orig. ed. 4to, London, same imprint, 1822, *q. v.*

1823. REINHARDT, J. Sur l'état actuel de nos Connaissances relativement à l'Ornithologie du Grœnland. < *Tidskr. Nat. Vidensk.*, vii, 1823, pp. 52 – —. (*Féruss. Bull.*, 2e sect., i, 1824, p. 86.)

Not seen—above French version of the title derived from AG. & STRICKL. *Bibl.*

1823. SABINE, J. Narrative of a Journey | to the shores of | the Polar Sea, | in the years 1819, 20, 21, and 22. | By | John Franklin, Captain R. N., F. R. S., | and commander of the expedition. | — | With an appendix on various subjects relating to | science and natural history. | Illustrated by numerous plates and maps. | — | Published by authority of the right honorable the earl Bathurst. | — | London: |

1823. SABINE, J.—Continued.

John Murray, Albemarle-street. | — | MDCCCXXIII. 1 vol. 4to. pp. xv, 783, maps, & pll. >Zoological Appendix, by Joseph Sabine, Esq. Birds, pp. 669–703.

An extended and important contribution to North American Ornithology. The collection upon which the report is based was chiefly procured at Cumberland House; but many of the specimens were from the route to Great Slave Lake, and on its borders. *Corvus hudsonius*, p. 671, sp. n.

1823. SAY, T. Account | of | an Expedition | from | Pittsburgh to the Rocky Mountains, | performed in the years 1819 and '20, | by order of | the Hon. J. C. Calhoun, Sec'y of War: | under the command of | Major Stephen H. Long. | From the Notes of Major Long, Mr. T. Say, and other gen- | tlemen of the exploring party. | — | Compiled | by Edwin James, | botanist and geologist for the expedition. | — | In two Vols.—With an Atlas. | Vol. I [II]. | — | Philadelphia: | H. C. Carey and I. Lea, Chestnut st. | 1823. 2 vols. 8vo. Vol. I, 2 p. ll., pp. 1–503. Vol. II, 3 p. ll., pp. 1–442, i–xcviii.

Long's Expedition bore excellent ornithological fruit, in the shape of the many important notices and descriptions of new species by Thomas Say, which are scattered inconveniently through the book in foot-notes. Vol. I, *Fringilla grammaca*, p. 139; *Sylvia celatus!*, p. 169; *S. bifasciata*, *Limosa scolopacea*, p. 170; *Pelidna pectoralis*, p. 171; *Pelidna cinclus* var. [= *bonapartii* Schleg.], p. 172. List of Birds, pp. 370–375. Observations on Birds at Engineer Cantonment, pp. 376–378. Vol. II, *Troglodytes obsoleta*, p. 4; *Columba fasciata*, p. 10; *Tetrao obscurus*, p. 14; *Fringilla psaltria*, *F. frontalis*, p. 40; *Hirundo lunifrons*, *Emberiza amœna*, p. 47; *Tyrannus verticalis*, p. 60. (All good spp. except: *S. bifasciata* = *Dendrœca cœrulea*; *Limosa scolopacea* = *Macrorhamphus griseus*; *Pelidna pectoralis* = *Tringa maculata*.)

1823. SAY, T. Account of an Expedition from Pittsburgh to the Rocky Mountains. . . . 3 vols. 8vo. London. 1823.

An English edition, not handled by me. There are also various other accounts of Say's zoological matter, which will be found fully cited in this Bibliography.

1823. SCORESBY, W., JR. Journal | of a voyage to the | Northern Whale-fishery; | including | researches and discoveries on the eastern Coast | of | West Greenland, | made in the summer of 1822, in the ship | Baffin of Liverpool. | By William Scoresby, Junior, | F. R. S. E., M. W. S. &c. &c. | Commander. | — | Edinburgh: | printed for Archibald Constable and Co. Edinburgh: | and Hurst, Robinson and Co. Cheapside, London. | — | 1823. 1 vol. sm. 8vo. pp. xliii, 472, maps, and pll. >App. No. III. List of Animals met with on the Eastern Coast of West Greenland, with Notes and Memoranda, pp. 416–429. II. Aves, pp. 421, 422.

Annotated list of 17 spp.

1824. [ANON.] Account of an expedition from Pittsburgh to the Rocky-mountains. 1819, 20. compiled by Edwin James, botanist and geologist. 3 Vol. London, 1823. 8. <*Oken's Isis*, Jahrg. viii, 1824, *Litter. Anzeig.*, pp. 225–291.

An extended review of Long's Expedition, with copious extracts, and reproducing Say's descriptions of new species in German.—*Fringilla grammaca*, *Sylvia celatus!*, p. 252; *S. bifasciata*, *Limosa scolopacea*, p. 253; *Pelidna pectoralis*, *P. cinclus* var., p. 254. Nominal list of 146 spp., pp. 257–260. *Troglodytes obsoleta*, p. 271; *Columba fasciata*, p. 272; *Tetrao obscurus*, p. 273; *Fringilla psaltria*, p. 273; *Fringilla frontalis*, p. 274; *Emberiza amœna*, p. 277; *Hirundo lunifrons*, p. 277; *Tyrannus verticalis*, p. 281.

1824. DESM . . ST, [DESMAREST, A. G.] American Ornithology or the History of the birds of the United States, etc. . . par Alex. Wilson. . . . < *Féruss. Bull.*, 2e sect., iii, 1824, pp. 77–79.

Une revue de l'ouvrage.

1824. SABINE, E. A | Supplement | to | the Appendix of Captain Parry's Voyage for the | Discovery of a north-west passage, | in the years 1819–20. | Containing | an account of the subjects | of | Natural History. | — | London; | John Murray, Albemarle-street. | — | MDCCCXXIV. 4to. 5 p. ll. each backed blank, pp. clxxxiii–cccx, with 6 pll.

The copy examined of this Supplement to the Appendix of Parry's First Voyage is bound together with the Appendix to Parry's Second Voyage. A good deal of confusion exists in citing the zoological matter of Parry's several Voyages, and writers may be cautioned that they can hardly be too careful to say what they mean, and, if possible, to handle the volumes instead of guessing at second-hand. The present article, as far as the Birds go, is by Capt. E. Sabine; it occupies pp. cxciii–ccx, and treats of 32 spp., with descriptive matter, field-notes, and some little synonymy. It refers to the same collection upon which was based E. Sabine's Memoir on the Birds of Greenland, in vol. xii of the *Trans. Linn. Soc.*, 1818, *q. v.*

1824–25. BONAPARTE, C. L. Observations on the Nomenclature of Wilson's Ornithology. < *Journ. Acad. Nat. Sci. Phila.*, iii–v, 1824–1825, in several parts, published at different times, as follows:—Part 1st: III, ii, pp. 340–352 (read Mar. 9, pub. Apr. 5, 1824, containing Nos. 1–22 of Wilson's list in vol. vi of Am. Orn.), pp. 353–371 (read Mar. 9, pub. Apr. 27, 1824, Nos. 23–58). Part 2d: IV, i, pp. 25–32 (read Mar. 23, pub. July, 1824, Nos. 59–69), pp. 33–66 (read Mar. 23, pub. Aug. 1824, Nos. 70–112). Part 3d: IV, i, pp. 163–200 (read Nov. 9, pub. Dec. 1824, Nos. 113–167). Part 4th: IV, ii, pp. 251–277 (read Nov. 23, 1824, pub. Feb. 1825, Nos. 168–184, with various Nos. previously treated reviewed). Part 5th: V, i, pp. 57–64 (read May 31, pub. July, 1825, Nos. 185–194), pp. 65–106 (read May 31, pub. Aug. 1825, Nos. 195–227).

Marked "to be continued"; but there is no more of it in this publication. Also published separately, 1 vol. 8vo, Philadelphia, Finley, 1826.—See *Féruss. Bull.*, iv, 1825, 115; vii, 1826, 244, 375; xi, 1827, 110.

A critical commentary on 227 of Wilson's species, *seriatim*; and as such one of the most notable and in some respects the most important of early American papers. Vieillot comes in also for a large share of criticism, chiefly unfavorable to him. Contains many new identifications and much rectification of synonymy. *Spiza*, iv, 45, *Hemipalama*, v, 87, genn. nn. No new species are proposed, but many species here appear under new combinations of generic and specific terms, and several are renamed specifically for one reason or another, constituting *de jure* new species. Such are: *Falco wilsonii*, iii, 348; *Turdus wilsonii*, iv, 34; *Icterus agripennis*, iv, 48; *Fringilla locustella*, iv, 51; *Sylvia pardalina*, iv, 179; *Sylvia wilsonii*, iv, 179; *Sylvia sphagnosa*, iv, 199; *Charadrius semipalmatus*, v, 98.

1825. BONAPARTE, C. [L.] Descriptions of two new species of Mexican Birds. < *Journ. Acad. Nat. Sci. Phila.*, iv, 1825, pp. 387–390.

Corvus ultramarinus, p. 387; *Icterus melanicterus*, p. 389.

1825. BONAPARTE, C. [L.] Additions to the Ornithology of the United States. < *Journ. Acad. Nat. Sci. Phila.*, v, 1825, pp. 28–31.

Falco melanopterus. Sylvia palmarum, Columba leucocephala, C. zenaida (n. sp., p. 30); *Rallus giganteus* (n. sp., p. 31); *Sterna cayana*—6 spp. collected in Florida by T. R. Peale.

1825. DESM . . ST, [DESMAREST, A. G.] Observations sur la nomenclature de l'ornithologie de Wilson; par Charles Bonaparte. . . < *Féruss. Bull.*, 2e sect., iv, 1825, pp. 115–117.

Extrait. Voir 1824-25, BONAPARTE, C. L.

1825. MM. LES PROFESSEURS. Extrait D'un Rapport fait à l'Administration du Muséum par une Commission composée de plusieurs de MM. les Professeurs, sur les résultats de la mission que M. Milbert a remplié aux États-Unis d'Amérique pendant sept ans (de 1817 à la fin de 1823). < *Mém. du Mus. d'Hist. Nat.*, xii, 1825, pp. 18–29.

Oiseaux, 2,000. Voir pp. 21, 23, 29.

1825. RICHARDSON, J. Appendix | to | Captain Parry's Journal | of a | Second Voyage | for | the discovery of a northwest passage from | the Atlantic to the Pacific, | performed in | his Majesty's Ships Fury and Hecla, | in | the years 1821–22–23. | — | Published by authority of the Lords Commissioners of the Admiralty. | — | London: | John Murray, | Publisher to the Admiralty and Board of Longitude. | — | MDCCCXXV. 4to. 2 p. ll., pp. 1–432. > Zoological Appendix.— No. I. Account of the Quadrupeds and Birds, by John Richardson, M. D., M. W. S. pp. 287–399.

Birds, pp. 342–379. An extended and formal notice of 38 spp., with synonymatic, descriptive, and miscellaneous matter. The page looks wonderfully like that of the *Fauna Boreali-Americana*, and doubtless Richardson drew upon this article for that work.

1825–33. BONAPARTE, C. L. American | Ornithology; | or, | The Natural History | of | Birds inhabiting the United States, | not given by Wilson. | With figures drawn, engraved, and coloured, from Nature. | By | Charles Lucian Bonaparte. | Vol. I [–IV]. | Philadelphia: | Carey, Lea, & Carey—Chestnut Street. | London:—John Miller, 40 Pall Mall. | William Brown, Printer. | 1825 [1828, 1828, 1833]. 4 vols. imp. 4to. Vol. I, 1825, pp. i–vi, 1 l., pp. 1–105, pll. 1–9. Vol. II, 1828, pp. i–vii, 1 l., 1–94, pll. 10–15. Vol. III, 1828, 2 p. ll., pp. 1–60, pll. 16–21. Vol. IV, 1833, 2 p. ll., pp. 1–142, pll. 22–27.

This is a quasi-continuation of Wilson, gotten up in similar style, if not spirit; it is united with Wilson by several of the editors of the latter, making a "Wilson and Bonaparte's" American Ornithology. But the original distinction and complete separation of the two works must be fully recognized. See Jameson's, Jardine's and Brewer's "Wilson", 1831, 1832, 1840.

Vol. I, 1825.—Pl. 1, f. 1, *Muscicapa savana*; f. 2, *Myiothera obsoleta*; f. 3, *Sylvia chrysoptera* ♀. Pl. 2, f. 1, *Muscicapa forficata*; f. 2, *M. verticalis*; f. 3, *M. saya*, sp. n., p. 20; f. 4, *Regulus cristatus*. Pl. 3, f. 1 ♂, 2 ♀, *Icterus icterocephalus*, sp. n.! (*nec* L.; excl. the synonymy here given!), p. 27; f. 3, *Sylvia maritima* ♀. Pl. 4, f. 1 ♂, 2 ♀, *Quiscalus major*. Pl. 5, f. 1, *Q. versicolor*; f. 2, *Sylvia celata*; f. 3, *Fringilla grammaca*. Pl. 6, f. 1 ♂, 2 ♀, *Pyrrhula frontalis*; f. 3, *Fringilla psaltria*; f. 4 ♀, *F. tristis*; f. 5, *F. amœna*. Pl. 7, f. 1, *Hirundo lunifrons*; f. 2, *Strix cunicularia*. Pl. 8, f. 1, 2, *Picus varius*; f. 3, *Columba fasciata*. Pl. 9, *Meleagris gallopavo*.

Vol. II, 1828.—Pl. 10, f. 1, *Falco cooperii*, sp. n., p. 1; f. 2, *Sylvia palmarum*. Pl. 11, *Falco dispar*; f. 2 ♀, *Sylvia azurea*. Pl. 12, *Falco cyaneus*. Pl. 13, f. 1, *Garrulus stelleri*; f. 2 ♂, 3 ♀, *Emberiza lapponica*. Pl. 14, f. 1, *Garrulus floridanus*; f. 2, *Picus tridactylus*; f. 3, *Picus erythrocephalus*. Pl. 15, f. 1, *Fringilla vespertina*; f. 2 ♀, *Fringilla ludoviciana*; f. 3 ♀, *Loxia leucoptera*; f. 4 ♀, *Fringilla cyanea*.

Vol. III, 1828.—Pl. 16, f. 1, *Cinclus pallasii*; f. 2, *Bombycilla garrula*; f. 3 ♀, *Pyrrhula enucleator*. Pl. 17, f. 1, *Columba leucocephala*; f. 2, *C. zenaida*. Pl. 18 ♀, *Tetrao obscurus*. Pl. 19, *T. phasianellus*. Pl. 20, *Tetrao canadensis* ♂ [this is *franklini!*]. Pl. 21, f. 2, the same, ♀. Pl. 21, f. 1, *T. urophasianus* (text and number of figg. on this pl. disagree).

1825–33. BONAPARTE, C. L.—Continued.

Vol. IV, 1833.—Pl. 22, *Cathartes gryphus.* Pl. 23, f. 1, *Ibis falcinellus*; f. 2, *Tringa pectoralis*; f. 3, *Scolopax grisea.* Pl. 24, f. 1, *Phalaropus wilsonii*; f. 2, *Tringa schinzii*; f. 3, *Charadrius melodus.* Pl. 25. f. 1, *Phalaropus wilsoni juv.*; f. 2, *P. hyperboreus*; f. 3, *Tringa himantopus*; f. 4, *Charadrius semipalmatus.* Pl. 26, f. 1, *Ardea pealii*; f. 2, *Aramus scolopaceus*; f. 3, *Numenius borealis.* Pl. 27, f. 1, *Gallinula galeata*; f. 2, *Rallus noveboracensis.*

1826. [ANON.] Vögel von Grönland, von E. Sabine, beobachtet im Jahr 1818. < *Oken's Isis*, Jahrg. x, 1826, pp. 97–99.

Aus *Linn. Trans.*, xii, pt. ii, pp. 527–559, *q. v.*, 1818. „Synonymie und Beschreibungen sind sehr ausführlich; wir geben nur den Auszug."

1826. BONAPARTE, C. L. [Catalogue of the Birds of the United States, etc.] "8vo, London, 1826."

Not seen. If there *is* any such tract, it must be a mere reissue, or different imprint, of one given elsewhere.

1826. BONAPARTE, C. L. [Comparative Catalogue, in parallel columns, of the Birds of Rome and Philadelphia.] "8vo, London, 1826."

Not seen. Is there any such tract? Compare beyond, 1827–32.

1826. BONAPARTE, C. L. Observations | on the | Nomenclature | of | Wilson's Ornithology. | — | By Charles Lucian Bonaparte. | — | Philadelphia: | Published by Anthony Finley. | — | 1826. 1 vol. 8vo. 125 unpaged ll.

Reissued, without pagination, from the *Journ. Phila. Acad.*, which see, 1824–25. The observations relate to 278 spp. of Wilson's; 119 of Wilson's names are changed; only 8 of his species are rejected as nominal. Bonaparte here raises the total number of United States species to 360, which he disposes in 80 genera.

1826. DESM . . . ST, [DESMAREST, A. G.] American ornithology or the natural history of the Birds etc. . . . par Charles Lucien Bonaparte. Tom. 1 . . . < *Féruss. Bull.*, 2e sect., vii, 1826, pp. 100, 101.

Revue du tome Ier de cet ouvrage.

1826. LESSON, [R.] P. Observations sur la nomenclature de l'Ornithologie de Wilson; par Charles Bonaparte. . . . < *Féruss. Bull.*, 2e sect., vii, 1826, pp. 244, 245.

Journ. Acad. Phila., iv, 1824–25, *q. v.*

1826. LESS[ON, R. P.] Observations sur la nomenclature de l'Ornithologie de Wilson; par Ch. Bonaparte. . . . < *Féruss. Bull.*, 2e sect., vii, 1826, p. 375.

Journ. Acad. Phila., v, 1825, *q. v.*

1826. LESS[ON, R. P.] Supplement to the American Ornithology, . . : par George Ord. . . . < *Féruss. Bull.*, 2e sect., vii, 1826, pp. 438–440.

1826. ROSS, J. C. Journal | of a | Third Voyage for the discovery of a | North-west Passage | from the Atlantic to the Pacific; | performed in the years 1824–25, | in His Majesty's Ships | Hecla and Fury, | under the orders of | Captain William Edward Parry, R. N., F. R. S., | and commander of the expedition. | — | Illustrated by plates and charts. | — | Published by authority of the Lords Commissioners | of the Admiralty. | — | London: | — | John Murray, | publisher to the Admiralty, and Board of Longitude. | — | MDCCCXXVI. 1 vol. 4to. pp. i–xxviii, 1–186, 1 l., 1–151, maps, pll., and woodcc. > Appendix. Zoology. By Lieut. James Clark Ross. Birds, pp. 96 (*bis*)–108 (*bis*).

A formal treatise; synonymy and field-notes on 29 spp. of birds.

1827. [ANON.] Mr. Audubon's Ornithology of the United States of America. < *Edinb. Journ. Sci.*, vi, 1827, p. 184.
A short anticipatory notice.

1827. BONAPARTE, C. L. Catalogue of the Birds of the United States, systematically arranged in Orders, Families, Genera, and Subgenera. < *Contrib. Maclurian Lyc. Arts and Sci.*, i, 1827, pp. 8–34.
Nominal list of 362 species under 81 genera, 28 families, 5 orders, with some little synonymy and a few notes.

1827. BUONAPARTE, C. L. Supplement to the Genera of North American Birds, and to the Synopsis of the Species found within the territory of the United States. < *Zoological Journ.*, iii, 1827, pp. 49–53.
The number of genera named raised from 80 to 83; of species to 366.—*Phaleris cerorhynca (sic)*, p. 53, sp. n.

1827. LESSON, [R. P.] Addition à l'ornithologie des États-Unis; par Ch. Bonaparte. . . . < *Féruss. Bull.*, 2e sect., x, 1827, pp. 399–400.
Journ. Phila. Acad., 1825, p. 28.

1827. LESSON, [R. P.] Genera des Oiseaux de l'Amérique-Septentrionale, et Synopsis des espèces . . .; par Charles Lucien Bonaparte. . . . < *Féruss. Bull.*, 2e sect., xi, 1827, pp. 108–110.
Précis de cet ouvrage: *Ann. N. Y. Lyc.*, vol. ii, p. 7.

1827. LESSON, [R. P.] Observations on the nomenclature of Wilson's Ornithology . . .; par Charles-Lucien Bonaparte. . . . < *Féruss. Bull.*, 2e sect., xi, 1827, pp. 110, 111.
Seulement une notice de son article: *Journ. Phila. Acad.*

1827. LESSON, [R. P.] Genera des oiseaux du nord de l'Amérique et Synopsis des espèces qui vivent aux États-Unis; par Charles-Lucien Bonaparte. . . . < *Féruss. Bull.*, 2e sect., xii, 1827, pp. 337, 338.
Analyse de son travail: *Ann. Lyc. N. Y.*, ii, p. 101.

1827. SWAINSON, W. A Synopsis of the Birds discovered in Mexico by W. Bullock, F. L. S. and H. S., and Mr. William Bullock, jun. < *Philos. Mag.*, i, 1827, pp. 364–369, 433–442.
Important from the number of new species described; 101 species in all are given. The descriptions of the new ones are all short, and in many cases insufficient; they have given much trouble. A large number of new genera are also here named, but not characterized; these names actually anticipate in point of date (May and June) their publication with characters in *Zool. Journ.*, No. 10 (which is here referred to, before its publication), but the year is the same (1827), and they are generally accredited to the latter journal. *Hirundo melanogaster, H. thalassinus, Platyrhynchus pusillus*, p. 366; *Tyrannula* (g. n.) *obscura, T. affinis, T. barbirostris* (not Mexican, but West Indian), *T. nigricans, T. pallida*, p. 367; *T. musica, Setophaga* (g. n.) *miniata, S. rubra, Ptiliogonys* (g. n.) *cinereus, Cinclus mexicanus*, p. 368; *Merula flavirostris, M. tristis, M. silens, Orpheus* (g. n.) *curvirostris, O. cærulescens, Seiurus* (g. n.) *tenuirostris. Sialia* (g. n.) *azurea (descr. nullâ)*, p. 369; *Trichas* (g. n.) *personatus* (renaming of old sp.), p. 433; *Sylvicola* (g. n., p. 433) *inornata, Vermivora* (g. n.), *Pipilo macronyx, P. maculata, P. fusca, P. rufescens*, p. 434; *Ammodramus* (g. n.) *bimaculatus, Chondestes* (g. n.) *strigatus, Fringilla cinerea, Carduelis mexicanus, Dolichonyx* (g. n.), p. 435; *Agelaus (sic)* (g. n.) *longipes, Xanthornus bullockii, Cassiculus* (g. n.) *coronatus, Icterus cucullatus*, p. 436; *Scaphidurus* (g. n.) *palustris, Garrulus sordidus, G. coronatus, Pica formosa, Spermagra* (g. n.) *erythrocephala*, p. 437; *Pyranga livida. P. hepatica. P. bidentata, Tiaris* (g. n.) *pusillus, Guiraca* (g. n.) *melanocephala, Psittacus leucorhynchus*, p. 438; *Macrocercus pachyrhynchus, Picus formicivorus, P. elegans, P. albifrons*, p. 439;

1827. SWAINSON, W.—Continued.

Colaptes (g. n.) *mexicanus, Xiphorhynchus* (g. n.) *leucogaster, G. flavigaster, Oxyglossus* (g. n.) *maculatus, Cuculus maculatus, Crotophaga sulcirostris, Trogon mexicanus*, p. 440; *Trochilus fulgens, T. thalassinus, T. melanotus, T. platycercus, Cynanthus* (g. n.) *latirostris, C. bifurcatus, C. minimus*, p. 441; *C. lucifer, Lampornis* (g. n.) *amethystinus, Momotus mexicanus*, p. 442, spp. nn. For all the new genera, excepting *Scaphidurus*, which is simply proposed as a substitute for *Quiscalus*, preoccupied in botany, reference is made to the then still unpublished No. 10 of *Zool. Journ. for* 1827.

1827–32. BONAPARTE, C. L. Specchio comparativo delle Ornitologie di Roma e di Filadelfia. 8vo. Pisa, Nistri, 1827.—Supplemento alla Specchio comparativo, etc. 1832.

Not seen—cited from BAIRD.

1827–38. AUDUBON, J. J. The | Birds of America; | from Original Drawings | By John James Audubon, | [etc., etc.] | London. | Published by the Author. [Mut. mut.] 4 vols., double elephant folio, size about 38 × 28 inches. Vol. I, 1827–1830, title-leaf and Plates I–C. Vol. II, 1831–1834, title-leaf and Plates CI–CC. Vol. III, 1834–1835, title-leaf and Plates CCI–CCC. Vol. IIII, title-leaf and Plates CCCI–CCCCXXXV. 435 colored plates (1065 figures).

Originally published in 87 parts, supposed to be of 5 pll. each (=435 pll.), during the years specified; subsequently bound in 4 vols., each furnished with a title-leaf, but no other text. More strict dates of some of the earlier parts are:—Parts i–v, pll. 1–25, 1827. Parts vi–x, pll. 26–50, 1828. Parts xi–xv, pll. 51–75, 1829. Parts xvi–xx, pll. 76–100, 1830. The series was completed June 20, 1838. "The plates were published without any text, to avoid the necessity of furnishing copies gratis to the public libraries in England, agreeably to the laws of copyright. Trübner, p. 174, quotes the work with plain plates. I have never seen one in that condition. Owing to the destruction by fire of the stock and copperplates the work has become extremely rare, and even small sections command high prices" (*Sabin*). A perfect copy now fetches about $1,000. Purchasers should see that the size is not much, if any, less than above given, otherwise the Turkey's head may be trimmed off. There are some defective copies of the original in the market, containing selections of some of the smaller plates, or with some of the larger ones folded or mutilated, or lacking title-leaf, etc. There is a late *smaller folio* ed. of 1861, containing only 140 pll., to be carefully distinguished from the original.

This is by far the most sumptuous ornithological work ever published. The accompanying text, entitled "Ornithological Biography", etc., is in 5 large 8vo vols., 1831–1839, *q. v.*

1828. AUDUBON, J. J. Account of the Method of Drawing Birds employed by J. J. Audubon, Esq. F. R. S. E. < *Edinb. Journ. Sci.*, viii, 1828, pp. 48–54.

1828. BONAPARTE, C. L. The Genera of North American Birds, and a Synopsis of the Species found within the territory of the United States; systematically arranged in Orders and Families. < *Ann. Lyc. Nat. Hist. New York*, ii, 1828, pp. 7–128, 293–451. (Read Jan. 24, 1826.)

This is the ostensible date, being that of the completed volume of the *Annals;* and the separate issue of the paper is also dated 1828. But it is certain that the paper, or parts of it, appeared earlier, for it is reviewed in *Férussac's Bul etin*, 1827. The actual date, of a part of the paper at least, is probably 1826; but my efforts to fix it with precision have been unavailing.

A notable article, occupying the greater part of the volume. 382 spp.; characters of the higher groups as well as of the species; synonymy and much miscellaneous critical matter; distribution, and notes on habits. An Appendix (pp.

1828. BONAPARTE, C. L.—Continued.

433–451) retraces the ground, giving additional particulars. Accounts of various species, not North American, are interpolated. I find no new specific names in these articles, Bonaparte's new species having been just previously characterized. *Cerorhinca*, g. n., p. 437. The article was republished in one vol. 8vo, New York, Seymour, 1828.

1828. BONAPARTE, C. L. The Genera of North American Birds. . . . By Charles Lucian Bonaparte. 1 vol. 8vo. New York, Seymour, 1828. pp. 1–128, 293–451.

Not seen.—The work commonly quoted as "Bonaparte's Synopsis"; consisting of his paper in the *Ann. Lyc. N. Y.*, separately issued, without repagination.

1828. BONAPARTE, C. L. Further Additions to the Ornithology of the United States; and Observations on the Nomenclature of certain Species. < *Ann. Lyc. Nat. Hist. New York*, ii, 1828, pp. 154–161. (Read Nov. 6, 1826.)

Ardea pealii, p. 154 (Florida); *Tringa himantopus*, p. 157 (New Jersey), spp. nn. Allied species treated for comparison. Synopsis of the genus *Phalaropus*.

1828. LESSON, [R. P.] Genera des Oiseaux du Nord de l'Amérique, et Synopsis des espèces qui vivent aux États-Unis; par Charles-Lucien Bonaparte. . . . < *Féruss. Bull.*, 2e sect., xiii, 1828, pp. 122–125.

"Dans un premier article, nous avons présenté les espèces décrites par M. Ch. B.; dans celui-ci, nous réunirons celles que cet auteur signale comme nouvelles, ou comme ayant été mal décrites ou peu connues."—18 espèces.

1828. LESSON, [R. P.] Birds of America from drawings made during a residence of twenty-five years in the United States and its territories. . . . par John James Audubon. < *Féruss. Bull.*, 2e sect., xv, 1828, pp. 301–303.

Une courte notice du commencement de l'ouvrage.

1828–29. WILSON, A. (*ed.* ORD, G.) American Ornithology; | or, | the Natural History | of the | Birds of the United States. | Illustrated with plates | engraved and coloured from original drawings taken | from nature. | By Alexander Wilson. | — | With a sketch of the author's life, | by George Ord, F. L. S. &c. | — | In three vols.—Vol. I [–III]. | — | Published by Collins & Co., New York, | and | Harrison Hall, Philadelphia. | 1828 [1829]. 3 vols. 8vo. Vol. I, pp. i–cxcix, 1–231, 1828; II, 1828; III, 1829. With a folio atlas of 76 pll., 1829.

In this edition, which consists of three 8vo. vols. of text and one folio atlas, the species are rearranged in systematic order, with synonymy and references to the plates. The preliminary matter consists of contents (pp. iii, iv), editor's preface (pp. v, vi), preface to life of Wilson (pp. vi–viii), and Ord's sketch of the author's life (pp. ix–cxcix). It does not appear who was the editor. The text appears to be that of the original in full, and many notes, some of them signed 'G. Ord', are interpolated.—The folio atlas has no text except the title:—American Ornithology; | or, | the Natural History | of the | Birds of the United States. | — | By Alexander Wilson. | Plates | Engraved and Coloured from Original Drawings taken from Nature. | — | Published by Collins & Co. New York, | and | Harrison Hall, Philadelphia. | 1829. It consists of 76 colored plates. This is the *editio princeps* (? What was a "3 vol. 4to ed. Phila. 1824–1828"?) of "ORD'S Wilson"; there are later issues of the same.

1829. [ANON.] Sur les oiseaux chanteurs de l'Amérique [du nord]; par M. Rennie. . . . < *Féruss. Bull.*, 2e sect., xviii, 1829, p. 454.

Extrait du *Magaz. Nat. Hist.*, mars 1829, pp. 414–421.

1829. COMMITTEE. Report of a committee appointed by the Lyceum of Natural History af [*sic*] New York to examine the splendid work of Mr.

1829. COMMITTEE.—Continued.
Audubon upon the Birds of North America. May, 1829. < *Sillim. Am. Journ. Sci.*, xvi, 1829, pp. 353, 354.

1829. DOUGLAS, D. Observations on some Species of the Genera Tetrao and Ortyx, natives of North America; with Descriptions of Four new Species of the former, and Two of the latter Genus. < *Trans. Linn. Soc.*, xvi, 1829, pp. 133–149. ("Read" Dec. 16, 1828. Published in 1829. Whole vol. dated 1833.)
Tetrao urophasianus, p. 133 (not new; see BP., *Zool. Journ.*, iii, 212); *T. urophasianellus*, p. 136; *T. sabini*, p. 137; *T. franklinii*, p. 139; *T. richardsonii* ("Sabine MSS."), p. 141; *Ortyx picta*, p. 143; *O. douglassii* ("Vigors MSS."), p. 145, spp. nn.

1829. DOUGLAS, D. Observations on some species of the Genera Tetrao and Ortyx, natives of North America, with descriptions of four [lately] new species of the former, and two of the latter genus. < *Philos. Mag.*, v, 1829, pp. 73, 74.
From *Trans. Linn. Soc.*, xvi, 1829, pp. 133–149, *q. v.*

1829. RENNIE, J. Sketches of Twenty-four [North] American Song Birds. < *Loudon's Mag. Nat. Hist.*, i, 1829, pp. 414–421.
In evidence against a prejudice of their inferiority as songsters.

1829. SWAINSON, W. Some Account of the Work now publishing by M. Audubon, entitled The Birds of America. < *Loudon's Mag. Nat. Hist.*, i, 1829, pp. 43–52, figg. 19, 20.
Highly commendatory.

1829. VIGORS, N. A. On some species of Birds from the North-west Coast of America. < *Zool. Journ.*, iv, Oct. 1828—Jan. 1829 (1829), pp. 352–358.
A sub-head of Art. XLVII, "Sketches in Ornithology, &c.", p. 345.—Birds of Beechey's Voyage. *Pica beecheii, Pica collieii*, p. 353; *Coccothraustes ferreorostris, Picus scapularis, Colaptes collaris, Ortyx douglasii*, p. 354; *Strepsilas melanocephalus, Numenius rufiventris, Recurvirostra occidentalis*, p. 356; *Anas urophasianus, Uria brevirostris*, p. 357; *Fratercula carinata, Larus belcheri*, p. 358, spp. nn.

1830. BONAPARTE, C. L. Nachtrag zu den nordamericanischen Vögeln. < *Oken's Isis*, Bd. xxiii, 1830, p. 1068.
Aus d. *Zool. Journ.*, iii, 1827, pp. 49–53, *q. v.*

1830. DOUGLAS, D. Ueber einige nordamericanische Gattungen von Tetrao u. Ortyx. < *Oken's Isis*, Bd. xxiii, 1830, pp. 917–921.
Uebersetzt aus d. *Linn. Trans.*, xvi, 1829, pp. 133–149, *q. v.*

1830. LESSON, [R. P.] Observations sur quelques espèces des genres Tetrao et Ortyx, de l'Amérique septentrionale, . . . par M. David Douglas. . . . < *Féruss. Bull.*, 2e sect., xx, 1830, pp. 326–331.
Les descriptions originales se trouvent réproduites ici. Voir 1829, DOUGLAS, D.

1831. [ANON.] Ueber einige Vogelgattungen von den nordwestküste von America. < *Oken's Isis*, Bd. xxiv, 1831, pp. 218–220.
Zool. Journ., iv, 1829, pp. 352–358; vergl. 1829, VIGORS, N. A.

1831. [EDITOR.] Compendium of American Ornithology, by Thomas Nuttall, A. M., F. L. S., &c. < *Sillim. Am. Journ. Sci.*, xx, 1831, pp. 154, 155.
Announcement of the work.

1831. LESS[ON, R. P.] Les genres des oiseaux du nord de l'Amérique, avec un synopsis des espèces qui vivent sur la territoire des États-Unis; par Charles-Lucien Bonaparte. < *Féruss. Bull.*, 2e sect., 1831, pp. —.
Un tableau des familles, des genres et des espèces, en commençant au 4e ordre, aux Gralles ou Échassiers, tiré des *Ann. Lyc. Nat. Hist. N. Y.*, 1827, pp. 293 et suiv.

1831. "ORNITHOPHILUS." [SWAINSON, W.?] Remarks on Audubon's "Birds of America," and "Ornithological Biography." <*Edinb. New Philos. Journ.*, x, 1831, pp. 317–332.

A very elaborate and extended review, intended to be impartially critical, and evincing a very just appreciation of the great work.

(1811) 1831. PALLAS, P. S. Zoographia | Rosso-Asiatica, | sistens | omnium animalium | in extenso Imperio Rossico | et | adjacentibus maribus observatorum | recensionem, domicilia, mores et descriptiones, | anatomen atque icones plurimorum. | Auctore | Petro Pallas, | Eq. Aur. Academico Petropolitano. | — | Volumen primum [secundum]. | — | — | Petropoli | in officina Caes. Academiæ Scientiarum impress. MDCCCXI. | Edit. MDCCCXXXI. | 3 vols. 4to (with folio atlas?). Vol. I. >Imperii Rossici | Aves. | — | Pars prima. pp. 297–568, pll. 9. Vol. II. Imperii Rossici | Aves. | — | Pars altera. pp. vii, 374, pll. 15.

This celebrated work is differently quoted at 1811 and 1831; but, as it clearly appears upon the title-page that it was not published until 1831, though printed in 1811, the later date must be taken as that of the introduction of the new species, whatever may have been the actual opportunities for consulting and quoting the pages during the twenty years they remained *ined.* The title-page sufficiently indicates the scope of this general systematic account of the birds of the Asiatic-Russian Empire, 425 in number. In consequence of the previous writings of this author covering much the same ground, it is difficult to say which are the new names of this work. The following are figured on the (unnumbered) 4to colored plates accompanying:—(Vol. I.) *Stryx barbata*, p. 318; *Aquila pelagica*, p. 343; *Corvus dauricus*, p. 387; *C. cyanus*, p. 391; *Turdus fuscatus*, p. 451; *T. ruficollis*, p. 452; *Muscicapa albicilla*, p. 462; *Motacilla cyanura*, p. 490; *Alauda mongolica*, p. 516; *Hirundo alpestris*, p. 534. (Vol. II.) *Passer pusillus*, p. 28; *P. roseus*, p. 42; *Emberiza fuscata* ♂ ♀, p. 41; *E. rustica*, p. 43; *E. coronata*, p. 44; *E. chrysophrys*, p. 46; *E. chrysops*, p. 45; *Tetrao arenaria*, p. 73; *T. caucasica*, p. 76; *Charadrius caspius*, p. 136; *Trynga glareola*, p. 194; *Anser cynoides ferus*, p. 218; *A. hyperboreus*, p. 227; *A. pictus*, p. 233; *Phalacrocorax pygmæus*, p. 300; *Larus niveus*, p. 320; *Cepphus perdix*, p. 351.

The following are the references to plates given in the text (? to the folio atlas accompanying the work, not seen by me; it is quoted as fasc. 1–6, Petrop. 1834–1842, fol.):—Pl. i, *Stryx doliata.* ii, *S. barbata.* iii, *Falco gyrfalco.* iv, v, *F. peregrinus.* vi, *F. vespertinus.* vii, *F. aesalon.* viii, *Aquila nobilis.* —? *A. pelagica.* x, *Accipiter lagopus.* xi, *A. astur.* xii, *A. nisus.* xiii, *Vultur barbatus.* xiv, *V. meleagris.* xv, *Corvus dauricus.* xvi, *C. cyanus.* xvii, *C. stelleri.* xviii, *Sturnus cinclus.* xix, *Xanthornus caucasicus.* —? *Merops persica.* xxi, *Turdus leucocellus.* xxii ("xii"), *T. fuscatus.* xxiii, *T. ruficollis.* xxiv, *A. muscicapa grisola.* —? fig. 1, *M. albicilla.* xxv, *Motacilla rubicola.* xxvi, *M. montanella.* xxvi, f. 1, *M. cyanea.* xxvii, *M. aurorea.* xxviii, *M. leucomela.* xxix, *M. calliope.* xxx, f. 1, *M. cyanura.* xxiv, f. 2, *M. melanope.* xxxi, *M. citrinella.* xxxii, *Alauda tartarica.* xxxiii, f. 2, *A. leucoptera.* xxx, f. 2, *Hirundo alpestris.* —? *Parus cyanus.* xxxiv, f. 2, *P. palustris.* xxxvi, *Pyrrhula erythrina.* xxxvii, *P. caudata.* xxxviii, *Passer carduelis.* xxxix, *P. calcaratus.* xl, xli, *P. arctous.* xlii, *P. roseus.* xliii, f. 1, *P. pusillus.* f. 2, *Emberiza hyperborea.* xliv, *E. pithyornis.* xlv, *E. cia.* xlvi, *E. fucata.* xlvii, f. 1, *E. pusilla.* f. 2, *E. rustica.* xlviii, f. 1. *E. chrysops.* f. 2, *E. chrysophrys.* xlix, f. 1, *E. pyrrhuloides.* f. 2, *E. spodocephala.* l, *E. aureola.* li, *E. rutila.* lii, *Tetrao tetrix.* **, *T. caucasica.* liv, *Grus leucogeranus.* lv, *Ardea comata.* lvi, *Charadrius gregarius.* lvii, *C. morinellus.* lviii, *C. caspius.* lix, *C. hypomelanus.* lxi, *Trynga salina.* —? *Trynga cinclus.* lxii, *Phalaropus ruficollis.* lxiii, *P. rufus.* lxiv, *Anser cygnoides.* lxv, *A. hyperboreus.* "lxvii" (=lxvi?), *Anser ruficollis.* lxvii, *A. pictus.* lxviii, *Anas steleri.* lxix, *A. rufina.* lxx, *A. falcata.* lxxi, *A. glocitans.* lxxii, *A. hyemalis.* lxxiii, *A. mersa.* lxiv, f. 1, *Phalacrocorax pygmaeus.* lxv, f. 2, *P. bicristatus.* lxxvi, *P. pelagicus.* lxxvi, *Larus niveus.* lxxvii, *L. ichthy-*

(1811) 1831. PALLAS, P. S.—Continued.

aetus. lxxviii, *Sterna caspia.* lxxx, *Cepphus perdix.* lxxxii, *Lunda cirrhata.* lxxxiii, *Lunda arctica.* lxxxiv, *Lunda psittacula.* lxxxv, *Uria senicula.* lxxxvi, *U. cristatella.* lxxxvii, *U. dubia.* lxxxviii, *U. tetracula.* lxxxix, *U. mystacea.* xc, *U. pusilla.*—I cannot resolve the uncertainty about these plates and should be thankful for information. They are said to have appeared (some or all of them), and I have seen them quoted as "Icones ad Zoographiam Rosso-Asiaticam, fasc. i–vii, 1834 et seq."

1831. RICHARDSON, J. [Exhibition of New Species of Birds from British America, about to be described in the forthcoming 'Fauna Boreali-Americana'.] < *P. Z. S.*, i, 1831, p. 132.

Twenty-three species; names only.

1831. SWAINSON, W., *and* RICHARDSON, J. Fauna | Boreali-Americana; | or the | Zoology | of the | northern parts | of | British America: | containing | descriptions of the objects of natural history collected by the late northern land | expeditions under command of Captain Sir John Franklin, R. N. | Part Second, | The Birds. | By William Swainson, Esq., F. R. S., F. L. S., | honorary or corresponding member of several foreign societies. | And John Richardson, M. D., F. R. S., F. L. S., | member of the geographical and zoological societies of London, of the Wernerian natural history society of Edinburgh, of the | literary and historical society of Quebec, and foreign member of the geographical society of Paris, | Surgeon and Naturalist to the Expeditions. | — | Illustrated by numerous plates and woodcuts. | — | Published under the authority of the right honourable the Secretary of State | for colonial affairs. | — | London: | John Murray, Albemarle-street. | — | MDCCCXXXI. 1 vol. 4to. pp. lxvi, 524, pll. 24–73 (cont. from vol. I), and 41 woodcc.

The influence which this work exerted cannot well be overstated. It occupied in the present century the place previously filled by the works of Edwards, Forster, Pennant, and Latham, so far as the birds of America north of 49° N. lat. are concerned; for forty years following its publication, it was the chief source of inspiration of numberless writers upon the same subject, and it continues to be a standard authority. The book has considerable unwritten history, touching its joint-authorship and some other matters, scraps of which have come to the surface, as, for instance, in a passage of the memorable controversy between Mr. Swainson and N. A. Vigors; but Dr. Richardson's policy seems to have always kept the surface smooth, whatever went on underneath.

The work has a twofold character—it is an account of the Birds of the Fur Countries, interspersed with contributions from Mr. Swainson to general ornithology—the latter in the shape of disquisitions, foreign to the scope and purpose of the book, upon the quinary, miscalled the natural, system; wildly speculative articles which, though in the fashion at the time, add considerably to the bulk of the volume without perceptibly increasing its value, and are chiefly noticed now because they include several new tenable generic names.

Dr. Richardson's Introduction (pp. i–xl), constituting a treatise by itself, opens with a historical sketch of the subject. The collections made on the Arctic coasts during the voyages of Ross and Parry are described along with those made in the interior on the Franklin expeditions which Dr. Richardson accompanied. The circumstances under which the latter were made are detailed, and the general character of the avifauna is sketched. Various elaborate tables follow, displaying the several categories of species, their movements, etc. The remainder of the Introduction is occupied by Mr. Swainson, *more suo;* the Preface is from the same hand, though it is less distinctively quinarian. The body of the work treats formally of 238 species, giving detailed descriptions, miscel-

1831. SWAINSON, W., *and* RICHARDSON, J.—Continued.

laneous biographical items, and considerable synonymy, together with the foreign disquisitions above commented upon, which are discontinued, however, at page 342. The nomenclature, as well as the classification, appears to be Mr. Swainson's for the land birds; for the rest, Temminck's Manual is followed. The minute descriptions suffice for the identification of nearly every species of the work, while Swainson's plates have long been famous for their faithfulness both in drawing and coloring, copies vary, however, in the latter respect.

The following appear to be new names (some of extralimital species), described for the most part by Mr. Swainson, some being, however, by Dr. Richardson, and two or three by the authors conjointly:—*Accipiter mexicanus*, p. 45; *Buteo* (*Circus*) *cyaneus*? var.? *Americanus*, p. 55; *Lanius excubitorides*, p. 115; *L. elegans*, p. 122; *Tyrannus borealis*, p. 141; *Tyrannula pusilla*, p. 144; *T. richardsoni*, p. 146; *Cinclus Americanus*, p. 173 [altered name from *C. mexicanus* of 1827]; *Orpheus meruloides*, p. 187 [renamed from confessedly beforenamed species]; *Sialia mexicana*, p. 202; *Erythaca* (*Sialia*) *arctica*, p. 209; *Vireo Bartramii*, p. 235; *V. longirostris*, p. 237; *Emberiza* (*Plectrophanes*) *picta*, p. 250; *Emberiza pallida*, p. 251; *Pyrgita* (*Pipilo*) *arctica*, p. 260; *Linaria* (*Leucosticte*) *tephrocotis*, p. 265; *Garrulus brachyrynchus*, p. 296; *Picus auduboni*, p. 306; *Picus* (*Apternus*) *arcticus*, p. 313; *Tetrao Franklinii*, p. 348; *Tetrao* (*Lagopus*) *leucurus*, p. 356; *Tringa Douglasii*, p. 379; *Limosa Edwardsii*, p. 398; *Scolopax Drummondii*, *S. Douglasii*, and *S. Braziliensis*, p. 400; *Larus Hutchinsii*, p. 419 (note); *L. zonorhynchus*, p. 421; *L. brachyrhynchus*, p. 422; *L. Franklinii*, p. 424; *L. Bonapartii*, p. 425; *Lestris Richardsonii*, p. 433; *Oidemia americana*, p. 450; *Cygnus buccinator*, p. 464; *Anser Hutchinsii*, p. 470; *Pelecanus* (*Carbo*) *dilophus*, p. 473.

The work closes with two appendices by Mr. Swainson, in which a number of new genera and other groups are characterized. Appendix No. **1**, "Characters of genera and sub-genera hitherto undefined," pp. 481–497. New generic names, many of which were, however, used in earlier pages of the work, are *ostensibly* as follows (but all of them are not actually new here):—*Telophorus*, *Laniellus*, p. 481; *Platylophus*, *Teprodornis*, *Analcipus*, p. 482; *Erucivora*, *Oxynotus*, p. 483; *Saurophagus*, *Tyrannula*, p. 484; *Brachypus*, *Andropadus*, *Hæmatornis*, p. 485; *Micropus*, *Phyllastrephus*, *Dasycephala*, *Chætops*, p. 486 (*C. Burchelli*, n. s., p. 487); *Pellorneum* (*P. ruficeps*, n. s.), *Orateropus*, p. 487; *Aipunemia*, *Erythaca*, p. 488; *Phœnicura*, *Thamnobia*, *Dumecola* (*D. ruficauda*, n. s.), p. 489; *Parisoma*, *Lessonia*, *Leiothrix*, p. 490; *Pteruthius*, *Calyptura*, *Metopia*, *Phœnicircus*, p. 91; *Chrysopteryx* (*C. erythrorhynchus*, n. s.), *Laniisoma*, *Eopsaltria*, p. 492; *Zonotrichia*, *Leucosticte*, p. 493; *Scaphidurus*, *Scolecophagus*, *Molothrus*, p. 494; *Dysornithia*, *Cyanurus* (a composite group, embracing several more recent generic forms; no type named, *C. cristatus* mentioned first), *Anthreptes*, p. 495; *Selasphorus*, *Chordeiles*, *Centrocercus*, p. 496; *Lyrurus*, *Dendronessa*, p. 497. Appendix No. II, pp. 498–501, discusses affinities, and presents *Scolopax leucurus*, sp. n., p. 501.

The plates, mainly representing new species, are as follows (they are not bound consecutively):—24, *Falco sparverius*; 25, *F. æsalon*; 26, *Accipiter* (*Astur*) *palumbarius*; 27, *Buteo vulgaris*; 28, *B. lagopus*; 29, *Circus cyaneus* var. *Americanus*; 30, *Bubo arcticus*; 31, *Strix cinerea*; 32, *S. tengmalmi*; 33, *Lanius borealis*; 34, *L. excubitorides*; 35, *Tyrannus borealis*; 36, *Merula minor*; 37, *Merula solitaria* [marked "35"]; 38, *Orpheus meruloides*; 39, *Erythaca* (*Sialia*) *arctica*; 40, *Sylvicola maculosa*; 41, *Sylvicola petechia*; 42, *Sylvicola* (*Vermivora*) *rubricapilla*, up. fig., and *S.* (*V.*) *peregrina*, low. fig.; 43, *Seiurus aquaticus*; 44, *Anthus aquaticus*; 45, *Tyrannula saya*; 46, *T. pusilla*, up. fig., *T. richardsonii*, low. fig.; 47, *Setophaga Bonapartii*; 48, *Plectrophanes lapponica*; 49, *P. picta*; 50, *Linaria tephrocotis*; 51, *Pyrgita* (*Pipilo*) *arctica* ♂; 52, *eadem*, ♀; 53, *Pyrrhula* (*Corythus*) *enucleator*; 54, *Garrulus stelleri*; 55, *G. brachyrhynchus*; 56, *Picus tridactylus*; 57, *P. arcticus*; 58, *Centrocercus urophasianus*; 59, *Tetrao obscurus* ♂; 60, *idem*, ♀; 61, *T. Franklinii*, marked *T.* "*canadensis* ♂"; 62, *T. canadensis* ♀; 63, *Lagopus leucurus*; 64, *L. rupestris*; 65, *Numenius borealis*; 66, *Tringa Douglasii*; 67, *Totanus semipalmatus*; 68, *Coccothraustes vespertina*; 69, *Phalaropus Wilsonii*; 70, *Clangula Barrovii*; 71, *Larus Franklinii*; 72, *L. Bonapartii*; 73, *Lestris Richardsonii*.

1831. WAGLER, J. Einige Mittheilungen über Thiere Mexicos. < *Oken's Isis*, Bd. xxiv, 1831, pp. 510–535.

II, *Aves*, pp. 515–533, 74 spp. *Larus pipixcan*, p. 515; *Parra gymnostoma*, p. 517; *Fulica leucopyga*, p. 518; *Columba flavirostris*, p. 519; *Scolopax trachydactyla*, p. 521; *Phalaropus stenodactylus*, p. 523; *Geococcyx variegata* (= *Cuculus viaticus* Licht., Mus. Berol.), p. 524; *Fringilla haemorrhoa* (Licht., M. B.); *F. xanthomaschalis*, p. 525; *Atlapetes* (g. n.) *pileatus*, *Iunco phaeonotus*, p. 526; *Corvus cacalotl*, p. 527; *Toxostoma* (g. n.) *vetula*, p. 528; *Muscicapa vulnerata*, p. 529; *Alauda chrysolaema*, p. 530; *Ardea lessonii*, p. 531, spp. nn. Sowie *Otis ruficollis*, p. 520, sp. n., aus Südafrika.

1831. WILSON, A., *and* BONAPARTE, C. L. (*ed.* JAMESON, R.) American Ornithology; | or the | Natural History | of | the Birds of the United States. | By Alexander Wilson, | and Charles Lucian Bonaparte. | Edited by Robert Jameson, Esq. F. R. S. E. & L. F. L. S. M. W. S. | Regius Professor of Natural History in the University | of Edinburgh, &c. | In four volumes. | Vol. I [–IV]. | Edinburgh: | Printed for Constable and Co. Edinburgh; | and Hurst, Chance, and Co. London. | 1831. 4 vols. 18mo. Vol. I, pp. xcvi, 271. Vol. II, pp. ix, 334. Vol. III, pp. viii, 320. Vol. IV, pp. x, 362. Each vol. with engr. title, and the 1st with portrait of Wilson. (No other illustrations.) Forming vols. LXVIII–LXXI of *Constable's Miscellany*.

The first European edition of "Wilson", including Ord's additions and Bonaparte's continuation, with rearrangement in systematic order of the matter by the editor, and frequent commentary by him; with a memoir of Wilson, by W. M. Hetherington, prefixed to the 1st vol. The concluding volume contains "Bonaparte"; also, an Appendix, in which are given some extracts from Audubon, considerable matter from Swainson and Richardson, and outlines of Brehm's arrangement of various groups.

1831–39. AUDUBON, J. J. Ornithological Biography, | or an account of the habits of the | Birds of the United States of America; | accompanied by descriptions of the objects represented | in the work entitled | The Birds of America, | and interspersed with delineations of American | scenery and manners. | By John James Audubon, F. R. SS. L. & E. | [etc., 5 lines.] | [Vol. I.] Edinburgh: | Adam Black, 55. | North Bridge, Edinburgh; | [etc., 5 lines.] | — | MDCCCXXXI.

Vol. I, as above. pp. i–xxiv, 512, + 15 pp. of Prospectus, &c. It is the text to plates I–C of the elephant folios. The date is 1831. This same 1st vol. (other copies) is said to also bear the imprint "Philadelphia, E. L. Carey and A. Hart, MDCCCXXXII," and to be often missing.

Vol. II. Edinburgh: Adam and Charles Black, . . . MDCCCXXXIV. pp. i–xxxii, 1–588. Date 1834. The text to plates CI–CC. Other copies said to also bear the imprint "Boston, Hilliard, Gray, and Company, MDCCCXXXV."

Vol. III. Edinburgh: Adam and Charles Black, . . . MDCCXXXV. pp. i–xvi, 1–638, 9 woodcuts in text. Date 1835. The text to plates CCI–CCC.

Vol. IV. Edinburgh: Adam & Charles Black, . . . MDCCCXXXVIII. pp. i–xxviii, 1–618, with 39 woodcuts in text. Date 1838. The text to plates CCCI–CCCLXXXVII.

Vol. V. Edinburgh: Adam & Charles Black, . . . MDCCCXXXXIX [*sic!*]. pp. i–xl, 1–664, with 93 woodcuts in text. Date

1831–39. AUDUBON, J. J.—Continued.

1839. The text to plates CCCLXXXVIII–CCCCXXXV, ending at p. 304. Vol. continues with "Descriptions of species found in North America, but not figured in the 'Birds of America'", pp. 305–336; and with an "Appendix; comprising additional observations on the habits, geographical distribution, and anatomical structure of the Birds described in this work; together with corrections of errors relative to the species", pp. 337–646.

Five vols. roy. 8vo, printed by Neill & Co., Old Fishmarket, Edinburgh.

The work above described is the *editio princeps* of the text belonging to the elephant folio plates. In 1840-44, the whole text was systematically rearranged, with omission of the "Delineations of American scenery and manners", the addition of some new matter, and the renaming of the species to agree with the "Synopsis" of 1839. With the text thus modified were intercalated the folio plates, reduced by camera lucida, and renumbered to agree with the rearrangement; and the whole work, thus modified, became the 7-vol. roy. 8vo ed., entitled "The Birds of America", etc., 1840–44, *q. v.*

Vol. I, 1831.—*Muscicapa bonapartii*, p. 27, pl. 5 (pub. 1827); *M. selbii*, p. 46, pl. 9 (pub. 1827); *Falco washingtonii*, p. 58, pl. 11 (pub. 1827); *Troglodytes bewickii*, p. 96, pl. 18 (pub. 1827); *Turdus ludovicianus*, p. 99, pl. 19 (pub. 1827); *Sylvia roscoe*, p. 124, pl. 24 (pub. 1827); *Sylvia vigorsii*, p. 153, pl. 30 (pub. 1828); *Sylvia childrenii*, p. 180, pl. 35 (pub. 1828); *Falco stanleii*, p. 186, pl. 36 (pub. 1828); *Muscicapa traillii*, p. 236, pl. 45 (pub. 1828); *Regulus cuvierii*, p. 288, pl. 55 (pub. 1829); *Sylvia carbonata*, p. 308, pl. 60 (pub. 1829); *Sylvia rathbonia*, p. 333, pl. 65 (pub. 1829); *Emberiza henslowii*, p. 360, pl. 70 (pub. 1829); *Falco temerarius*, p. 381, pl. 75 (marked 85 in text) (pub. 1829); *Anthus pipiens*, p. 408, pl. 80 (pub. 1830); *Falco harlani*, p. 441, pl. 86 (pub. 1830), spp. nn.

Vol. II, 1834.—*Emberiza townsendii*, p. 183 (pl. 400, fig. 4); *Fringilla macgillivraii*, p. 285 (pl. 355); *Corvus americanus*, p. 317, pl. 156; *Parus carolinensis*, p. 341, pl. 160; *Fringilla bachmanii*, p. 366, pl. 165; *Troglodytes americana*, p. 452, pl. 179; *Sylvia bachmanii*, p. 483, pl. 185; *Fringilla lincolnii*, p. 539, pl. 193; *Sylvia swainsonii*, p. 563, pl. 198, spp. nn.

Vol. III, 1835.—*Rallus elegans*, p. 27, pl. 203; *Phalacrocorax floridanus*, p. 387, pl. 252; *Ardea occidentalis*, p. 542, pl. 281, spp. nn.

Vol. IV, 1838.—*Pelecanus americanus*, p. 88, pl. 311; *Anas breweri*, p. 302, pl. 338; *Corvus nuttalli*, p. 450, pl. 362; *Hirundo serripennis*, p. 593, figs. 1, 2, 3, in text, no pl., spp. nn.

Vol. V, 1839.—*Falco harrisii*, p. 30, pl. 392; *Sylvia macgillivrayi*, p. 75, pl. 399; *Diomedea fusca*, p. 116, pl. 407; *Sterna havelli*, p. 122, pl. 409, fig. 1; *S. trudeani*, p. 125, pl. 409, f. 2; *Phalacrocorax resplendens*, p. 148, pl. 412, f. 1; *P. townsendii*, p. 149, pl. 412, f. 2; *Picus martinæ*, p. 181, pl. 417, figs. 1, 2; *P. phillipsii*, p. 186, pl. 417, f. 5, 6; *P. harrisii*, p. 191, pl. 417, figs. 8, 9; *Ptilogonys townsendi*, p. 206, pl. 419, f. 2; *Fringilla townsendi*, p. 236, pl. 424, f. 7; *Hæmatopus bachmani*, p. 245, pl. 427, f. 1; *H. townsendi*, p. 247, pl. 427, f. 3; *Aphriza* (g. n.) *townsendi*, p. 249, pl. 438; *Uria townsendi*, p. 251, pl. 429, f. 1; *Sylvia delafieldii*, p. 307, no pl.; *Troglodytes parkmanii*, p. 310, no pl.; *Fringilla mortonii*, p. 312, no pl.; *Picus gairdnerii*, p. 317, no pl.; *Larus occidentalis*, p. 320, no pl.; *Diomedea nigripes*, p. 327, no pl.; *Procellaria pacifica*, p. 321, no pl.; *P. tenuirostris*, p. 333, no pl., spp. nn.; and the following, "not characterized": *Falco bachmanii*, *Strix forficata*, *Tantalus fuscus*, p. 334; *Phasianus americanus*, *Caprimulgus nuttallii*, *Picus pyrrhonotus*, p. 335; *Fringilla chlorura*, *Turdus townsendi*, *Phalacrocorax leucurus*, *P. leuconotus*, p. 336.

1832. [ANON.] American Ornithology or the natural history of the birds of the united States. Illustrated with plates, engraved and coloured from original Drawings taken from Nature, by Al. Wilson. Philadelphia by Bradford, i–ix, 1808–1814. 4. 76 pl. < *Oken's Isis*, Bd. xxv, 1832, pp. 979–987.

Uebersicht. Inhaltsverzeichniss. Stück der Classification hier mitgetheilt.

1832. [ANON.] American Ornithology or the natural history of Birds inhabiting the United States, not given by Wilson. With figures drawn, engraved and coloured from nature. By Charles Lucian Bonaparte; gr. 4. Philadelphia. <*Oken's Isis*, Bd. xxv, 1832, pp. 987–991.
Inhaltsverzeichniss. Beschreibung der neuen Arten.

1832. [ANON.] [Review of Swainson and Richardson's Fauna Boreali-Americana. Part. II., containing the Birds. London, Murray, 1831.] <*Loudon's Mag. Nat. Hist.*, v, 1832, pp. 360–364.

1832. BONAPARTE, C. L. L. C. Bonaparte. Die Sippen der nordamericanischen Vögel und eine Synopsis der Gattungen in den vereinigten Staaten. Gelesen am 24. Jänn. 1826 (Annals of the Lyceum of nat. history of New-York. Vol. II, 1828, p. I–128 et 293–451. < *Oken's Isis*, Bd. xxv, 1832, pp. 1135–1197.
Vollständig, nach dem Originale.

1832. [EDITOR.] A Manual of the Ornithology of the United States and Canada. By Thomas Nuttall, A. M. F. L. S. Cambridge, Hilliard & Brown, pp. 682. <*Sillim. Am. Journ. Sci.*, xxii, 1832, pp. 178, 179.
Review of the first volume of Nuttall's work.

1832. GREEN, J. Fragmente zur Thiergeschichte. < *Oken's Isis*, Bd. xxv, 1832, p. 1042.
Fringilla tristis, Oriolus phœniceus; Am. Journ. Science, vol. iv, 1822, p. 309.

1832. JAMESON, W. Reise in der Davisstrasse 1820. <*Oken's Isis*, Bd. xxv, 1832, p. 594.
Auszug aus *The Edinb. Philos. Journ.*, Bd. iii, 1821, Heft 5, p. 309.

1832. RICHARDSON, J. Ueber Clima und Vegetation an der Hudsonsbay. <*Oken's Isis*, Bd. xxv, 1832, p. 607, 608.
Auszug aus *The Edinb. Philos. Journ.*, Bd. xii, 1825, Heft 24, p. 197.

1832. WILSON, A. American Ornithology, or the Natural History of the birds of the United States. . . . The illustrative notes and life of Wilson by Sir Wm. Jardine, Bart. 3 vols. 8vo. London and Edinburgh. 1832.
Not seen! Above title quoted from memory of a catalogue.

1832. WILSON, J. Ueber einige neue Tetrao (Grouse), von D. Douglas in den Rockygebirgen von Nordamerica entdeckt. <*Oken's Isis*, Bd. xxv, 1832, p. 919.
Auszug aus *The Edinburgh New Philos. Journ.*, 1830, Bd. viii, Heft 16, p. 372.

1832–34. NUTTALL, T. A | Manual | of the | Ornithology | of the | United States and of Canada. | By | Thomas Nuttall, A. M., F. L. S. | — | [Vol. I.] The Land Birds. | — | — | Cambridge: | Hilliard and Brown, | booksellers to the university. | — | MDCCCXXXII. | 12mo. pp. viii, 683, 53 woodcc. [Vol. II.] The Water Birds. | — | — | Boston: | Hilliard, Gray, and Company. | — | MDCCCXXXIV. 12mo. pp. vii, 627, woodcc.
The original edition, long out of print, and not common. Vol. I: *Sylvania*, g n., p. 290; *Falco buteoides*, p. 100; *Muscicapa cooperi sive M. inornata*, p. 282; *Regulus tricolor*, p. 420; *Troglodytes brevirostris*, p. 436; *Fringilla ambigua*, p. 484; *F. littoralis*, p. 504, spp. nn. Vol. II: *Heteropoda*, p. 135; *Euliga*, p. 167; *Microptera*, p. 192; *Amblyrhynchus*, p. 247; *Hydroka*, p. 259; *Gymnathus*, p. 403; *Gymnura*, p. 425, genn. nn.; *Ardea discors*, p. 54; *Numenius intermedius*, p. 100; *Tringa wilsonii*, p. 121; *Tringa audubonii*, p. 140, spp. nn.—Nuttall, like good wine, does not deteriorate with age, and needs none of my bush here.

1833. AUDUBON, V. G. Mr. Audubon, Jun., in Reply to Mr. Waterton's Remarks on Audubon's Biography of Birds. < *Loudon's Mag. Nat. Hist.*, vi, 1833, p. 369.

1833. DOUGLAS, D. Observations on some Species of the Genera Tetrao and Ortyx, natives of North America; with Descriptions of Four new Species of the former, and Two of the latter Genus. < *Trans. Linn. Soc.*, xvi, pt. iii, 1833, pp. 133–149. (Read Dec. 1828; pub. 1829.)

T. urophasianus Bp. fully described; *T. urophasianellus*, p. 136; *T. sabini*, p. 137; *T. franklinii*, p. 139; *T. richardsonii* "Sab. MSS.", p. 141; *Ortyx picta*, p. 143; *O. douglassii* "Vig. MSS.", p. 145, spp. nn. Account of habits of some of these is full; followed by field-notes on various other North American *Tetraonidæ*. (See same title, under its actual date, 1829.)

1833. EMMONS, E. A Catalogue of the Animals and Plants of Massachusetts. II. Birds. By Ebenezer Emmons, M. D. etc. < *Hitchcock's Rep. Geol. Min. Bot. and Zoöl. Mass.*, Amherst, 1833, pp. 545–551.

"A list of 160 species, sparingly annotated; symbols employed to indicate whether rare or common, resident or migratory, and whether known to breed in the State. The list includes two synonyms, but only one species (*Rhynchops nigra*), not confirmed as an inhabitant of the State. Very incomplete, but, so far as it goes, trustworthy and important. The first attempt at a scientific enumeration of the birds of Massachusetts."—(J. A. ALLEN, *in epist.*)

1833. JOSSELYN, J. An Account of Two Voyages to New England. . . . < *Collect. Mass. Historical Soc.*, 3d ser., iii, 1833, pp. 211–396.

A reprint—see the original, 1674.

1833? NUTTALL, T. Remarks and Inquiries concerning the Birds of Massachusetts. < *Mem. Amer. Acad. Arts and Sci.*, new ser., i, 1833, pp. 91–106, fig. on p. 98. (Actual date probably 1831.)

44 spp. treated. *Troglodytes brevirostris*, p. 98, fig., *Muscicapa inornata*, p. 102, marked as nn. spp., and article dated April, 1831; the pagination is quoted in *Man. Orn.* [1832], so that this may be the original notice of these spp., though the vol. containing it is dated 1833.

1833. "R. B." Observations on Mr. Waterton's attacks on Mr. Audubon. < *Loudon's Mag. Nat. Hist.*, vi, 1833, pp. 369–372.

1833. VIGORS, N. A. [On a Collection of Skins of Birds from California.] < *P. Z. S.*, i, 1833, p. 65.

Only a short paragraph.

1833. WATERTON, C. On the "Biography of Birds" of J. J. Audubon. < *Loudon's Mag. Nat. Hist.*, vi, 1833, pp. 215–218.

Waterton appears to have been satisfied that Audubon was a lying charlatan, and accordingly attacked him with a very pointed pen. Audubon's friends rallied to his vindication, and Waterton then abused him worse than ever. I have probably missed some of the papers, but most of the controversy is duly entered here.

1833. WILSON, J. Historical view | of | the progress of discovery | on the | more northern Coasts | of | America, | from the earliest period to the present time. | By Patrick Fraser Tytler, Esq., | F. R. S. & F. S. A. | With | descriptive sketches | of the | Natural History of the North American | Regions. | By James Wilson, Esq., F. R. S. E. & M. W. S. | — | To which is added an appendix, containing | remarks on a late memoir of Sebastian Cabot, with | a

1833. WILSON, J.—Continued.
vindication of Richard Hakluyt. | — | Illustrated by a map, and nine engravings by Jackson. | Second Edition. | -- | Edinburgh: | Oliver & Boyd, Tweeddale-court; | and Simpkin & Marshall, London. | MDCCCXXXIII. 16mo. pp. 444. > Chap. VII. The Birds of the Northern Regions of America, pp. 357–382, pl.
Summary and cursory sketch of North American ornithology, treating various leading species at some length. The plate represents *Larus sabinei*.

1834. [ANON.] Audubon's "Birds of America," and "Ornithological Biography." < *Edinb. New Philos. Journ.*, xviii, 1834, pp. 131–144.
Highly laudatory review.

1834. BACHMAN, J. Remarks in defence of the author of the "Birds of America." < *Journ. Boston Soc. Nat. Hist.*, i, pt. i, 1834, pp. 15–31.
Chiefly occupied in a discussion of the scansorial ability of *Crotalus*, represented by Audubon as attacking the nest of *Mimus polyglottus*, and in estimating the value of Audubon's experiments on the senses of sight and smell in *Cathartes*.

1834. EMMONS, E. Observations on the time of the appearance of the Spring Birds, in Williamstown, (Mass.) in the years 1831, 1832 & 1833. < *Sillim. Am. Journ. Sci.*, xxvi, 1834, p. 208.
Twenty-three species.

1834. GOULD, J. [On a Collection of Birds from North America, presented by Mr. Folliott.] < *P. Z. S.*, ii, 1834, pp. 14, 15.
Critical remarks on a few species.

1834. GOULD, J. [Remarks on exhibition of some Birds from the United States.] < *Lond. and Edinb. Philos. Mag.*, v, 1834, pp. 72, 73.
From *P. Z. S.*, Feb. 25, 1834.

1834. "O." Notices on [*sic*] a few of the Birds of Lower Canada. < *Loudon's Mag. Nat. Hist.*, vii, 1834, pp. 508–511.

1834. SWAINSON, W. Synopsis von Bullocks Vögeln aus Mexico. < *Oken's Isis*, Bd. xxvii, 1834, pp. 783–788.
Auszug aus d. *Philos. Magaz.*, Bd. i, 1827, pp. 364–369, 433–442, *q. v.*—103 Arten.

1834. WATERTON, C. Mr. Audubon and his Work, the Biography of Birds. < *Loudon's Mag. Nat. Hist.*, vii, 1834, pp. 66–74.
Further instalment of this person's flippant and supercilious animadversion.

1835. [ANON.] Audubon's Biography of Birds. < *North American Review*, July, 1835, pp. 194–231.
One of the most extended and minute accounts (formal biographies aside) extant of the "American backwoodsman" and his great work.

1835. [ANON.] Manuel of the Ornithology of the united states and of Canada, by Thomas Nuttall. Cambridge by Hilliard. Vol. I. 1832. 8. 683. II. 1834. 627. fig. 296. < *Oken's Isis*, Bd. xxviii, 1835, pp. 68–72.
Hier nur ein Verzeichniss der beschriebenen Arten.

1835. B. [Review of Audubon's Ornithological Biography.] < *Loudon's Mag. Nat. Hist.*, viii, 1835, pp. 184–190.

1835. BROWN, THOMAS. Illustrations of the American Ornithology of Alex. Wilson and Charles Lucien Bonaparte, with all the new discoveries, and the addition of the whole Forest Sylvia. Folio, Edinburgh, 1835.
Not seen—title from AG. & STRICKL. *Bibl.*

1835. FRANKLIN, J. [Verzeichniss der neuen Arten von seiner Polfahrt.] < *Oken's Isis*, Bd. xxviii, 1835, pp. 351, 352.

Auszug aus *P. Z. S.*, Sept. 27, 1831, p. 132.

1835. ROSS, J. C. Appendix | to the Narrative | of a | Second Voyage in search | of a | North-west Passage, | and of a | Residence in the Arctic regions | during the years 1829, 1831, 1832, 1833. | By | Sir John Ross, C. B., K. S. A., K. C. S., &c. &c. | Captain in the Royal Navy. | Including the reports of | Commander, now Captain, James Clark Ross, R. N., F. R. S., F. L. S., &c. | and | the discovery of the northern magnetic pole. | — | London: | A. W. Webster, 156, Regent street. | — | 1835. 1 vol. 4to. pp. i–xii, 1–120, I–CIII, pll. > Birds, pp. xxv–xlv.

This Appendix forms a separate vol., treating of various matters. Of birds, 41 species are given, with local synonymy and field-notes. *Cf. Arch. f. Naturg.*, 1836, (1), pp. 193–201.

1835. TAYLOR, R. C. On the Geology and Natural History of the North-Eastern Extremity of the Alleghany Mountain Range in Pennsylvania, United States. < *Loudon's Mag. Nat. Hist.*, viii, 1835, pp. 529–541.

Contains, pp. 539, 540, list of 56 spp.

1836. BACHMAN, J. On the Migration of the Birds of North America. Read before the Literary and Philosophical Society of Charleston, (S. C.) March 15th, 1833. < *Sillim. Am. Journ. Sci.*, xxx, 1836, pp. 81–100.

One of the earliest, if not the first, of the scientific treatises on this subject.

1836. FOX, C. Notice of some American Birds. < *Sillim. Am. Journ. Sci.*, xxix, 1836, pp. 291–294.

Scolopax pygmæa? (= *Tringa subarquata*) shot on Long Island, May 27, 1835; *Phalaropus hyperboreus; Corvus canadensis; Emberiza pecoris;* with list of about 40 spp. of birds seen in Fulton Market, New York City.

1836. KING, R. Narrative | of a | Journey to the shores | of | The Arctic Ocean, | in 1833, 1834, and 1835; | under the command of Capt. Back, R. N. | By Richard King, M. R. C. S., &c. | surgeon and naturalist to the Expedition. | In two volumes. | Vol. I [II]. London: | Richard Bentley, | Publisher in Ordinary to His Majesty. | New Burlington street. | 1836. 2 vols. 12mo. Vol. I, pp. ix, 312, pll. Vol. II, pp. viii, 321, pll.

Ornithological notes *passim*.

1836. KING, R. Temperature of Quadrupeds, Birds, Fishes, Plants, Trees, and Earth, as ascertained at different times and places in Arctic America, during Captain Back's Expedition. < *Edinb. New Philos. Journ.*, xxi, 1836, pp. 150, 151.

1836. RICHARDSON, J. Narrative | of the | Arctic Land Expedition | to the mouth of | the great Fish river, | and | along the shores of the arctic Ocean, | in the years 1833, 1834, and 1835; | by | Captain Back, R. N., | commander of the Expedition. | — | Illustrated by a map and plates. | — | London: | John Murray, Albemarle street. | MDCCCXXXVI. 1 vol. 8vo. (other copies in 4to). pp. i–x, 1 l., 1–663, map, and pll. > Appendix No. 1. Zoological Remarks, by John Richardson, M. D. F. R. S. &c. pp. 477 *et seq.*

Nominal list of 81 spp. of birds, pp. 482–485; followed, pp. 502–518, by a commentary on many of them. There is also, pp. 590–594, a table giving the temperature of mammals, birds, etc., at different times and places, by Mr. King.

1836. TAYLOR, R. C. A Supplement to the List of Species of Birds occurrent on the North-eastern extremity of the Alleghany Mountain Range, printed in [op. cit.] VIII. 539, 540; and Information on Traits in the Habits of the Passenger Pigeon (Columba migratoria), and of the Wolf (Canis Lupus). <*Loudon's Mag. Nat. Hist.*, ix, 1836, pp. 72–74.

1836. WIEGMANN, A. F. A. Zoologische Resultate von John Ross zweiter Nordpol-Reise. <*Arch. f. Naturg.*, ii, (1), 1836, pp. 183–203.
Vögel, pp. 192–201; 41 Arten.

1837. [ANON.] American ornithology by Alex. Wilson, with a continuations by Ch. Lucian Bonaparte. The illustrative notes et life of Wilson by W. Jardine, in three volumes. London Whittaker. 1832. 8. 408, 390, 507. Tab. 1–76. 1–21. <*Oken's Isis*, Bd. xxx, 1837, p. 261.
Take this and the next as samples of the hideous manner in which the *Isis* reviewers used to compound their titles.

1837. [ANON.] Ornithological Biography, or an account of the habits of the birds of the united States of America by John James Audubon. Edinburgh, Black; London, Havell, Longman etc. I. 1831. 8. 512. II. 1834. 588. III. 1835. 638. <*Oken's Isis*, Bd. xxx, 1837, pp. 922–928.

1837. BREWER, T. M. Some additions to the catalogue of the Birds of Massachusetts in Prof. Hitchcock's Report, &c. <*Journ. Boston Soc. Nat. Hist.*, i, pt. iv, 1837, pp. 435–439. (Read Dec. 6, 1836.)
Forty-five species.

1837. EDITORIAL. [Summary of J. Richardson's Report on North American Birds, sixth meeting of Brit. Assoc. Adv. Sci.] <*Mag. of Zool. and Bot.*, i, 1837, p. 300.
See the *Report* itself, this date, RICHARDSON, J.

1837. GRAAH, W. A. Narrative of an Expedition | to the | East Coast of Greenland, | sent by order of the King of Denmark, | in search of | the lost colonies, | under the command of | Captn W. A. Graah, of the Danish Royal Navy, | Knight of Dannebrog, &c. | — | Translated from the Danish, | by | the late G. Gordon Macdougall, F. R. S. N. A, | for the | Royal Geographical Society of London. | With the | original Danish chart completed by the Expedition. | — | London: | John W. Parker, West Strand. | — | M.DCCC.XXXVII. 1 vol. 8vo. pp. xvi, 199, map.
The Appendix contains, pp. 178, 179, a list of Greenland birds, 24 in number, among them *Cygnus musicus*.

1837. RICHARDSON, J. Report on North American Zoology. < *Rep. Sixth Meeting Brit. Ass. Adv. Sci. for* 1836, v, 1837, pp. 121–224.
Important. In its scope are included an enumeration of the animals inhabiting North America; the peculiarities of the fauna which they constitute; the geographical range of groups or individual species, with influencing circumstances, such as configuration of the land, climate, vegetation, etc. *Aves*, pp. 164–197: annotated list of the species inhabiting N. A. (including Mexico), unfortunately classified in a fanciful manner, caught from Swainson, and interspersed with reflections on "quinary" matters. The historical portion of the paper and that relating to the migration of species are full of interest. This paper was probably also published separately, under a different title, as I have seen it quoted simply "List", and I think with a different pagination.

1837. TOWNSEND, J. K. Description of Twelve New Species of Birds, chiefly from the vicinity of the Columbia river. < *Journ. Acad. Nat. Sci. Phila.*, vii, 1837, pp. 187–193.

1837. TOWNSEND, S. K.—Continued.

Read Nov. 15, 1836. *Sialia occidentalis*, *Fringilla oregana*, p. 188; *F. bicolor*, *Plectrophanes ornata*, p. 189; *Parus rufescens*, *P. minimus*, *Sylvia occidentalis*, p. 190; *S. nigrescens*, *S. audubuni*, *S. townsendi* "Nutt.", p. 191; *Orpheus montanus*, *Charadrius montanus* (quotes AUDUB., *Orn. Biog.*, pl. 350), p. 192. Concludes with a list of 72 spp., "prepared by the Ornithological Committee", from the Columbia River.

1838. [ANON.] Reise des Prinzen Maximilian von Wied durch Nordamerica. Coblenz bey Hölscher. 1838. Heft 3. 4. 4. Bogen 13–33. 8 Tafeln in Fol. < *Oken's Isis*, Bd. xxxi, 1838, pp. 794–796.

1838. BONAPARTE, C. L. A | Geographical and Comparative | List | of the | Birds | of | Europe and North America. | — | By Charles Lucian Bonaparte, | Prince of Musignano. | — | London: | John Van Voorst, 7, Paternoster-Row. | 1838. 1 vol. 8vo. pp. vii, 67.

Systematic list of names, with a few references and indication of habitats, in parallel columns. European, 503 spp.; American, 471 sp. European, not North American, 403; American, not European, 371; 100 spp. thus peculiar to each country. The list was much used and quoted, especially by American writers, for several years.

There are a number of new names, generic and specific, in the list; but as there is no indication which are newly proposed, it is the business of the ornithologist, and not the duty of the bibliographer, to find them out. The familiar Bonapartean "Nobs" are with lavish impartiality distributed through the list, not necessarily, however, indicating a new name, but merely that method, happily characterized by Temminck as "*à moi la cargaison*", in which Bonaparte was an expert beyond other men. The list has proven full of errors and omissions, though it was perhaps up to the then times, at least as far as America was concerned. *Cf. Ann. Mag. Nat. Hist.*, vol. i, 1839, 318; *Arch. für Naturg.*, 1839, (2), pp. 395, 396.

1838. REINHARDT, J. Ichthyologiske Bidrag til den Grönlandiske Fauna . . . . Indledning, indeholdende Tillæg og Forandringer i den fabriciske Fortegnelse paa grönlandske Hvirveldyr. < *Kongel. Danske Vid. Selsk. Naturvid. og Math. Afh.*, vii. Deel, 1838, pp. 85–105, pll. 1–3.

B. Fugle. 1. Tilvæxt af Fuglearter som ere faelleds for Europa og Nordamerika, 22 spp. 2. Tilvæxt af Fuglearter, som ere ebendommelige for den östlige Hemisphere, 2 spp. 3. Tilvæxt af Fuglearter, som ere ebendommelige for Nordamerika eller fortrinsviis forekommeder, 9 spp. Pl. I, f. 1, *Helminthophaga "ruficapilla"* (?). Pl. I, f. 2, *Zonotrichia leucophrys*. Pl. II, *Numenius hudsonicus* (*borealis* Wils.). Pl. III, *Platypus barrowii*.—Uebersetz. *Isis*, 1848, pp. 247–258. See 1848, REINHARDT, J.

1839. AUDUBON, J. J. A | Synopsis of the Birds | of | North America. | By | John James Audubon, F. R. SS. L. & E. | Member of various scientific associations in | Europe and America. | Edinburgh: | Adam and Charles Black, Edinburgh; | Longman, Rees, Brown, Green, and Longman, London. | MDCCCXXXIX. | 1 vol. 8vo. pp. xii, 359 + 1.

A descriptive, synonymatic, and geographical list of 491 species systematically arranged, with characters of the genera and higher groups, the main reference being to the plates of the folio ed. of the *Birds of Americ*, to which the present publication serves as a methodical index. The very notable changes throughout in classification and nomenclature from those adopted in the work just mentioned have obviously their source in W. Macgillivray; but as the arrangement between him and Audubon was presumedly mutually satisfactory, it is no part of the public's to enquire into their respective shares in the authorship of the present volume.

1839. [EDITORIAL.] Ornithology of the United States. < *Sillim. Am. Journ. Sci.*, xxxvi, 1839, p. 201.

J. K. Townsend's proposed work—notice of Part I.

1839. LICHTENSTEIN, H. Beitrag zur ornithologischen Fauna von Californien nebst Bemerkungen über die Artkennzeichen der Pelikane und über einige Vögel von den Sandwich-Inseln. < *Abhand. Königl. Akad. Wiss. Berlin aus dem Jahre* 1838, 1839, pp. 417–451, pll. 1–5. (Gelesen Juni 1837.)

Vultur californianus, p. 424, pl. 1. *Falco (Buteo) ferrugineus*, p. 428, sp. n. *Strix frontalis*, p. 430, sp. n. *Fringilla hudsonia*, Forst., p. 432. *Pelecanus trachyrynchus*, p. 433, pl. 2, p. 440, pl. 3, f. 5. *P. mitratus*, p. 436, pl. 3, f. 2, sp. n. *P. onocrotalus*, p. 436, pl. 3, f. 1. *P. crispus*, p. 437, pl. 3, f. 4. *P. rufescens*, p. 439, pl. 3, f. 3. *P. fuscus*, p. 441, pl. 3, f. 6. *P. conspicillatus*, p. 444, sp. n. *Hylomanes momotula*, p. 449, pl. 4, sp. n. (Mexico); *Homignathus obscurus*, p. 449, pl. 5, f. 1 (Oahu); *H. lucidus*, p. 451, pl. 5, f. 2, 3 (Oahu), spp. nn.—Noch eine spätere in der *Isis* erschienene Ausgabe dieses Artikels geben wir, 1844.

1839. PEABODY, W. B. O. Reports | on the | Fishes, Reptiles and Birds | of | Massachusetts. | — | Published agreeably to an order of | the Legislature, | by the Commissioners on the Zoological and Botanical | Survey of the State. | — | Boston: | Dutton & Wentworth, State printers. | — | 1839. 1 vol. 8vo. pp. xii, 426, pll. iv. >A | Report | on the | Ornithology of Massachusetts. | By | William B. O. Peabody. pp. 255–404.

Biographical notices, more or less extended, of 285 spp. known or believed to occur in Massachusetts, given in form of a communication to the Governor of Massachusetts, dated and signed in conclusion. The author was one of several persons commissioned to take charge of the State Survey above mentioned, according to resolution of the Legislature of 12th April, 1837. His report, with the two others, together constituting the present volume, was presented to Governor Everett, February 11, 1839, and the volume ordered to be printed by Legislature, resolution of April 9, 1839, in an edition of 1,500 copies. The book has become somewhat scarce. In consequence, perhaps, of difficulty of consultation, the ornithological portion has been quoted as if it appertained to Professor Hitchcock's later report on the Mineralogical and Geological Survey of the State, the continuation of which was directed by the Legislature at the same time that the Zoological and Botanical Survey was ordered. Hitchcock's original report was published in 1833, *which see*. Hitchcock was appointed by act of Legislature of June 5, 1830, to make a geological examination of the Commonwealth of Massachusetts in connection with the general Trigonometrical Survey ordered by act of March 3, 1830, and by act of February 2, 1831, was directed to cause to be annexed to his report a list of the native mineralogical, botanical, and zoological productions of the Commonwealth, as far as practicable and within the limits of the appropriation.

1839. TOWNSEND, J. K. List of the Birds Inhabiting the Region of the Rocky Mountains, the Territory of the Oregon, and the North West Coast of America. < *Journ. Acad. Nat. Sci. Phila.*, viii, 1839, pp. 151–158.

231 spp.—names only. A few names occur which had not apparently up to that time been described, some of which have not since been described.

1839? TOWNSEND, J. K. Ornithology of the United States. The descriptive part by J. K. Townsend. The drawings from nature by French Artists. 8vo. Philadelphia. J. B. Chevalier. (About 1839?)

Not seen—cited from Baird, who says,—"This was apparently only a specimen number." See *infrà*, 1849, same author.

1839. TOWNSEND, J. K. Narra ive | of a | Journey across the Rocky Mountains, | to | The Columbia River, | and | a visit to the Sandwich Islands, Chili, &c. | With | a Scientific Appendix. | By John K. Townsend, | Member of the Academy of Natural Sciences of Philadelphia. | Philadelphia: | Henry Perkins, 134 Chestnut street. | Boston: Perkins & Marvin. | — | 1839. 8vo. pp. viii, 352. > Appendix: Catalogue of Birds found in the Territory of the Oregon, pp. 331–352.

The personal narrative of a journey, performed by the author in 1834 under Captain Wyeth, in company with Thomas Nuttall, which resulted in the addition of some 25 spp. of birds to the fauna of the United States. These were described partly by the author, partly by Audubon. There is ornithological matter *passim*; but the portion of the Appendix above quoted is the only part of the work that formally treats of birds. It consists of a nominal list of 208 spp., followed by descriptions of 24 "new" species. All of these discoveries, however, had been previously named and described, either by the author himself, in pt. ii of vol. vii (1837) of the Philadelphia Academy's *Journal*, or by Mr. Audubon, in vol. iv of the *Orn. Biogr.*, these works being cited in every case. A few others are indicated in the catalogue, but neither named nor described. It is to be noted that the bird named *Phalacrocorax "resplendens"* by Audubon is here given as *P. "splendens"* Towns. MS., making in fact a synonym; and that a curious generic term, *Frinca*, is applied to the *Aphriza*. It looks like a misprint for *Tringa*, but is twice printed, with an asterisk, to indicate novelty. Audubon dedicated no fewer than *seven* of the species to Mr. Townsend.

1839. VIGORS, N. A. The | Zoology | of | Captain Beechey's Voyage; | compiled from the | collections and notes made by Captain Beechey, | the officers and naturalist of the expedition, | during a voyage to the Pacific and Behring's straits performed in | his majesty's ship Blossom, | under the command of | Captain F. W. Beechey, R. N., F. R. S., &c. &c. | in the years 1825, 26, 27, and 28 | By | .... N. A. Vigors, Esq., A. M., F. R. S., &c.; [and others]. | — | Illustrated with upwards of | fifty finely coloured plates by Sowerby. | — | Published under the authority of the Lords Commissioners of the Admiralty. | — | London: | Henry G. Bohn, 4, York Street, Covent Garden. | — | MDCCCXXXIX. 1 vol. 4to. pp. xii, 1–11, 9*–13*, 13–180, pll. col'd i–xliv, 1–3. > Ornithology, pp. 13–40, pll. iii–xiv.

"The expedition touched at various points, without making a lengthened stay at any; and the collection consequently consists of a variety of species met with at detached and distant localities, rather than of an extensive series which might serve to illustrate the zoology of a particular spot" (p. 13). The specimens also appear to have reached naturalists in poor state of preservation. The matter appears to have been written about 1830, but the appearance of the volume was delayed several years by J. E. Gray's dilatoriness in preparing the Mollusca.—Text descriptive, synonymatic, and briefly biographical;—it is a subject of lasting regret that indications of locality are not more frequent and more precise. Of about 100 spp. treated, three-fourths are North American, and the principal collections appear to have been made on the coast of California. The collection afforded Mr. Vigors numerous new species (few of which have proven really new); many of these were previously described by him in the *Zoological Journal*, though here marked "n. s." several years subsequently. Those so marked without reference to this journal are as follows:—*Muscicapa semiatra*, *Tyrannus cinereus*, *Orpheus leucopterus*, p. 17; *Sialia caeruleocollis* (pl. iii), *Motacilla leucoptera*, *Troglodytes spilurus* (pl. iv, f. 1), p. 18; *Saxicola œnanthoïdes*, *Saltator rufiventris*, *Fringilla crissalis*, *Fringilla meruloides*, p. 19; *Pyrrhula inornata*, p. 20; *Garrulus californicus* (pl. v), p. 21; *Picus chrysogenys*, *Colaptes collaris* (pl. ix), p. 24; *Sitta pygmœa* (pl. iv, f. 2), *Columba metallica*, p. 25; *C. monilis* (pl. x), p. 26; *Nycticorax crassirostris*, p. 27; *Mergulus cirrocephalus*, p. 32.—See 1829, VIGORS, N. A.

1839. VIGORS, N. A.—Continued.

Plates additional to those just noted are:—*Pica beecheli*, pl. vi; *P. colliei*, pl. vii; *Coccothraustes ferreo-rostris*, pl. viii; *Ortyx douglasii*, pl. xi; *Recurvirostra occidentalis*, pl. xii; *Anas carolinensis*, pl. xiii; *A. urophasianus*, pl. xiv.

1839-41. MAXIMILIAN, PRINZ ZU WIED. Reise | in | das Innere Nord-America | in den Jahren 1832 bis 1834 | von | Maximilian Prinz zu Wied. | — | Mit 48 Kupfern, 33 Vignetten, vielen Holzschnitten und einer Charte. | Erster [Zweiter] Band. | — | Coblenz, 1839 [1841]. | Bei J. Hœlscher. 2 vols. 4to. Vol. I, 1839, pp. v–xvi, 2 ll., pp. 1–654, 1 l. Vol. II, 1841, pp. i–xxiv, 1–688.

Ornithological *passim*. Vol. I, Anhang, Beilage B, Verzeichniss der in den Wintermonaten am Wabasch vorkommenden Vögel, pp. 643, 644. Vol. II, Anhang, Beilage A, Vogelkalender für die Gegend der Mandan-Dörfer im Winter 1833-34, pp. 654–657. Vol. I, *Cathartes septentrionalis*, p. 162, sp. n. Vol. II, *Gymnorhinus* (g. n.) *cyanocephalus*, sp. n., p. 22. Von dieser wichtigen Arbeit kennt man verschiedene Auflagen und Uebersetzungen, französische und englische.

1840. BACHMAN, J. Ueber den Zug der Vögel in Nordamerica. < *Oken's Isis*, Bd. xxxiii, 1840, pp. 171–176.

Uebers. aus d. *Am. Jour. Sci. and Arts*, Bd. xxx, 1836, pp. 81–100.

1840. [EDITORIAL.] A Synopsis of the Birds of North America . . . The Birds of America, from drawings made in the United States and their Territories. <*Sillim. Am. Journ. Sci.*, xxxix, 1840, pp. 343–357.

Formal review.

1840. GOSSE, P. H. The | Canadian Naturalist. | A series of conversations | on the | Natural History of Lower Canada. | By | P. H. Gosse. | Corr. Mem. of the Nat. Hist. Soc. of Montreal, and of the | Lit. and Hist. Soc. of Quebec. | [Vignette] | "Every kingdom, every province, should have its own monographer." | Gilbert White. | Illustrated with forty-four engravings. | London: | John Van Voorst, 1 Paternoster Row. | M.DCCC.XL. 1 vol. 12mo. pp. iii–xii, 1–372, 44 woodcc. in text.

Pleasant gossip here and there about birds, several of which are figured.

1840. NUTTALL, T. A | Manual | of the | Ornithology | of the | United States and of Canada. | By | Thomas Nuttall, A. M., F. L. S. &c. | Second edition, with additions | — | [Vol. I.] The Land Birds. | — | — | Boston: | Hilliard, Gray, and Company. | — | MDCCCXL. [Vol. II.] | The Water Birds. | [Same imprint and date.] 2 vols. 12mo. Vol. I, pp. viii, 832. Vol. II, pp. —, —; woodcc. in both vols.

While the general appearance and arrangement remain the same as in the first edition, there are a good many additional species, and other new matter, derived partly from the journey which the author and J. K. Townsend performed across the continent, partly from Audubon, and Swainson and Richardson.

Vol. I. *Buteo montana* (=*swainsoni* Bp.), p. 112; *Agelaius calacephalus*, p. 186; *Turdus cestulatus*, p. 400 (*ustulatus*, corrected, p. vi); *Trichas tephrocotis*, p. 462; *Troglodytes maculosa*, p. 492; *Fringilla querula*, p. 555: *F. aurocapilla*, p. 555; *F. gambelii*, p. 556; *F. guttata*, p. 581; *Picus septentrionalis*, p. 684; *P. rubricapillus*, p. 685; *Mniotilta borealis*, p. 705; *Trochilus icterocephalus*, p. 712; *Penelope borealis*, p. 780, spp. nn.

1840. PEABODY, W. B. O. A report on the Birds of Massachusetts made to the Legislature in the Session of 1838–9. <*Journ. Boston Soc. Nat. Hist.*, iii, pts. i-ii, 1840, pp. 65–266.

The same as that in the State Report, 1839, *q. v.*

1840. WILSON, A. (*ed.* BREWER, T. M.) Wilson's | American Ornithology, | with | notes by Jardine: | to which is added | A synopsis of American Birds, | including those described | by | Bonaparte, Audubon, Nuttall, and | Richardson; | by T. M. Brewer. | — | Boston: | Otis, Broaders, and Company. | — | 1840. 1 vol. 12mo. pp. viii, 746, pll. (not numbered), figg. 315 on the pll., and a few woodcc. in text.

Out of print for several years, and now rather scarce. The only American edition of Wilson except the original and one other (ORD's). The original text and nomenclature are followed, with interpolation of the nomenclature and commentary of Jardine. The illustrations are the originals, but uncolored, and so greatly reduced that three of Wilson's 4to plates generally constitute one plate of the present 12mo edition; the pll. are not numbered, but the numeration of the individual figg. is consecutive, 1–315; figg. 316, 317, 318, 322, are woodcuts in text. The special feature of the edition is the editor's synopsis of the *Birds of North America* (pp. 682–746), 491 spp.; those not given by Wilson being briefly described, with additional biographical items in many cases. The classification and nomenclature of this synopsis are 1839 Audubonian.

There is another issue of this work, "8vo, New York, 1852". Communicating with the editor, respecting this issue, not seen by me, I am informed by him that "when Weeks and Jordan failed the plates were bought by some persons in New York and a cheap edition was printed and sold for awhile; it was identically the same."

1840–43. MAXIMILIEN, PRINCE DE WIED-NEUWIED. Voyage | dans l'intérieur | de | l'Amérique du Nord, | exécuté pendant les années 1832, 1833 et 1834, | par | le prince Maximilien de Wied-Neuwied. | Ouvrage | accompagné d'un Atlas de 80 planches environ, | format demi-colombier, | dessinées sur les lieux | par M. Charles Bodmer, | et | gravées par les plus habiles artistes de Paris et de Londres. | — | Tome premier [deuxième, troisième]. | — | Paris, | chez Arthus Bertrand, éditeur, | Libraire de la Société de Géographie de Paris, | et de la Société royale des antiquaires du Nord, | Rue Hautefeuille, 25. | — | 1840 [1841, 1843]. 3 vols. 8vo. Vol. I, 1840, 2 p. ll., pp. 383. Vol. II, 1841, 2 p. ll., pp. 487. Vol. III, 1843, 2 p. ll., pp. 407, deux cartes.

Dans cette édition française, les notes zoologiques originalement affixées aux chapitres sont réunies au fin du tome III.

1840–44. AUDUBON, J. J. The | Birds of America, | from | drawings made in the United States | and their Territories. | By John James Audubon, F. R. SS. L. & E. | [etc. etc.] | — | Vol. I [–VII]. | — | New York: | published by J. J. Audubon. | Philadelphia: | J. B. Chevalier. | 1840 [–1844]. 7 vols. large 8vo. Vol. I, 1840, pp. i–viii, 9–256, pll. 1–70. Vol. II, 1841, pp. i–viii, 9–205, pll. 71–140. Vol. III, 1841, pp. i–viii, 9–233, pll. 141–210. Vol. IV, 1842, pp. i–viii, 9–321, + 1 l., pll. 211–280. Vol. V, 1842, pp. i–viii, 9–346, + 1 l., pll. 281–350. Vol. VI, 1843, pp. i–viii, 9–457, + 1 l., pll. 351–420. Vol. VII, 1844, pp. i–ix, 9–371, + 1 l., pll. 421–500.

This is the first 8vo ed., which may be distinguished from subsequent 8vo reissues by the different dates of the vols., number of vols., allotment of plates to each vol., the double imprint (Chevalier's name not in vols. vi and vii), and other particulars above given. There are several later 8vo issues, some of a different number of vols., some without plates, some not dated. See 1856, 1856 again, 1861, 1861 again, 1865, and 1871. The present is the only 8vo ed. published by the author himself; it was issued in 100 parts, to be bound in 7 vols., at the dates above given. Since "Audubon" was reduced to this 8vo shape, there has been no material change in the text of his work, no matter what changes in the

1840–44. AUDUBON, J. J.—Continued.

make-up of the volumes were introduced in successive issues; and the numeration of all the 8vo plates is the same, however indifferent the coloring may be found in some of the late issues.

This work consists of the original "Ornithological Biography"; with omission of the "Delineations of American scenery and manners", which were interpolated in the original; with systematic rearrangement of the articles; with changes in nomenclature of the genera and species to conform with the author's *Synopsis* of 1839; and with addition, in the 7th vol., of an appendix containing a number of species not described or figured in the original. The plates are reduced by the camera lucida from the originals in folio, systematically rearranged and renumbered, conformably with the sequence of the species in the text, in which they are interpolated. In quoting Audubon's plates, therefore, it is necessary to state whether the numbering of the folio or 8vo series is meant. In the original folios, there are only 435 pll.; in the present 8vo ed., there are 483, exclusive of the 17 additional ones in the Appendix (500 in all). The discrepancy arises from the fact that in the original several species were occasionally introduced on the same plate, but all such being given a separate plate in this edition. The additional species of this edition are the following, being chiefly those procured during the author's journey to the Upper Missouri in 1843:—*Fringilla harrisii*, p. 331, pl. 484; *Vireo bellii*, p. 333, pl. 485; *Alauda spragueii*, p. 334, pl. 486; *Plectrophanes smithii*, p. 336, pl. 487; *Emberiza LeConteii*, p. 338. pl. 488; *Sturnella neglecta*, p. 339, pl. 489; *Muscicapa flaviventris* (Baird, not sp. n.), p. 341, pl. 490; *M. minima* (Baird, not sp. n.), p. 343, pl. 491; *Quiscalus brewerii*, p. 345, pl. 492; *Emberiza shattuckii*, p. 347, pl. 493; *Picus ayresii*, p. 348, pl. 494; *Caprimulgus nuttallii*, p. 350, pl. 495 (named in the *Orn. Biogr.*, v, p. 335); *Columba trudeauii*, p. 352, pl. 496; *Alauda rufa* ("Lath."), p. 353, pl. 497; *Fuligula marila* (auct.), p. 355, pl. 498; *Icterus vulgaris* Daud., p. 357, pl. 499; *Emberiza bairdii*, p. 359, pl. 500; all of which, with the six exceptions noted, are spp. nn. An index to the whole work concludes vol. VII.

If a trace of sentiment be permissible in bibliography, I should say that the completion of this splendid series of plates with the name *bairdii* was significant; the glorious Audubonian sun had set indeed, but in the dedicating of the species to "his young friend SPENCER F. BAIRD" the sceptre was handed to one who was to wield it with a force that no other ornithologist of America has ever exercised.

1841. BARNSTON, G. Observations on the Progress of the Seasons as affecting Animals and Vegetables at Martin's Falls, Albany River, Hudson's Bay. < *Edinb. New Philos. Journ.*, xxx, 1841, pp. 252–256.

General observations, and calendar of natural phenomena, Mar. 15–Nov. 20.

1841. BONAPARTE, C. L. Neue Vögel aus Mexico und Südamerica. < *Oken's Isis*, Bd. xxxiv, 1841, pp. 937–939. [*Proc. Zool. Soc. Lond.*, 1837 (Nov. 14), p. 107.]

Verzeichniss der Arten, nebst Anmerkungen über die neuen Arten und Gattungen.

[To AUTHOR:—You have omitted the original in *P. Z. S.*, 1837, and also the Italian version in *Nuovi Atti Sc. Bologna*.—PROOFREADER.]

1841. GIRAUD, J. P. A Description | of | Sixteen new Species | of | North American Birds, | described in the Annals | of the New York Lyceum. | of Natural History. | By Jacob P. Giraud, Jr. | Collected in Texas, 1838. | — | New York. | George F. Nesbitt, printer, Tontine Building, | corner of Wall and Water streets. | — | 1841. 1 vol. folio, not paged (18 ll.), pll. (not numbered) viii.

The 16 spp. were never described in the "Annals", as stated, and are therefore here spp. nn. They are *Ic erius audubonii*, folio 3, no pl.; *Muscicapa texensis*, fol. 5, pl. 1; *M. lawrenceii*, fol. 7, pl. 2, f. 1; *M. fulvifrons*. fol. 9, pl. 2, f. 2; *Sylvia halseii*, fol. 11, pl. 3, f. 1; *Muscicapa "derhamii"* (should be *De Rhami*; named on pl. "Derahms" Flycatcher, and sometimes quoted "Durhami"), fol. 13, pl. 3, f. 2;

1841. GIRAUD, J. P.—Continued.

M. belli, fol. 15, pl. 4, f. 2; *Parus leucotis*, fol. 17, pl. 4, f. 1; *Fringilla texensis*, fol. 19, pl. 5, f. 1; *Pipra galericulata*, fol. 21, pl. 5, f. 2; *Muscicapa leucomus*, fol. 23, pl, 6, f. 1; *M. brasierii*, fol. 25, pl. 6, f. 2; *M. rubrifrons*, fol. 27, pl. 7, f. 1; *Sylvia olivacea*, fol. 29, pl. 7, f. 2; *Certhia albifrons*, fol. 31, pl. 8; *Alauda minor*, fol. 33, no pl. Doubt is usually entertained that these birds were taken in Texas; but the author stoutly so maintained to the day of his death, and recent discoveries along our southwest border render it more probable than it formerly seemed. Most of the species have been identified with earlier named ones; the work has been made the subject of several special critiques; *cf.* especially SCLATER, *P. Z. S.*, 1855, pp. 65, 66.

1841. HALDEMAN, S. S. [Note on Habits of four species of North American Birds.] < *Proc. Acad. Nat. Sci. Phila.*, i, 1841, p. 54.

Falco peregrinus, Quiscalus versicolor, Anser hyperboreus, Cygnus americanus.

1841. KIRTLAND, J. P. Fragments of Natural History. No. II. Ornithology. < *Sillim. Am. Journ. Sci.*, xl, 1841, pp. 19–24.

Desultory field-notes on a dozen species of North American birds.

1841. LEIB, G. C. [Description of the nest and eggs of Fulica Americana and Anas discors.] < *Proc. Acad. Nat. Sci. Phila.*, i, 1841, pp. 124, 125.

1841. MOORE, E. [Exhibition of some Newfoundland Birds.] < *P. Z. S.*, ix, 1841, p. 24.

1842. ABBOTT, S. L. [Remarks on exhibition of some Birds from Connecticut.] < *Proc. Bost. Soc. Nat. Hist.*, i, 1842, p. 56.

1842. ABBOTT, S. L. [Remarks on exhibition of 3 spp. of United States birds—Larus tridactylus, L. atricapilla, Numenius longirostris.] < *Proc. Bost. Soc. Nat. Hist.*, i, 1842, p. 61.

1842. [ANON.] Ornithological Biography, or an account of the habits of the birds of the united-States of America, by J. J. Audubon. Edinburgh by Adam. iv. 1838. gr. 8. 618. < *Oken's Isis*, Bd. xxxv, 1842, pp. 157, 158.

1842. BRANDT, J. F. "Dissertatio inauguralis sistens topographiam medicam portus novarchangelcensis," auct. Blaschke. St. Petersburg. 1842.

Not seen—cited from Baird, who took it from Baer and Helmerson, who are said to state that it contains a list of the birds of Russian America by Brandt.

1842. CABOT, S., JR. [Remarks on Meleagris and other Gallinæ of North America.] < *Proc. Bost. Soc. Nat. Hist.*, i, 1842, pp. 80, 81.

1842. [EDITORIAL.] The Birds of America, from drawings made in the United States and their Territories; . . . < *Sillim. Am. Journ. Sci.*, xlii, 1842, pp. 130–136.

Review of vol. II of Audubon's work.

1842. HALDEMAN, S. S. Notice of the Zoological Writings of the late C. S. Rafinesque. < *Sillim. Am. Journ. Sci.*, xlii, 1842, pp. 280–291.

A very useful summary and commentary for those who have to refer to the writings of this enigmatical man.

1842. REINHARDT, J. Meddelelse af nogle hidindtil i Grönland ikke trufne Fugle. < *Krøyer's Naturh. Tidskrift*, iv, Heft 1, 1842, pp. 72–75.

Compare 1843, same author.

1842–75. LEWIS, M., *and* CLARKE, W. History | of | the Expedition | under the command of | Captains Lewis and Clarke, | to | the sources of the Missouri, thence across the Rocky | Mountains, and down the River Columbia to the | Pacific ocean: performed during the | years 1804, 1805, 1806, | by order of the | Government of the United

1842–75. LEWIS, M., *and* CLARKE, W.—Continued.

States. | Prepared for the press | by Paul Allen, Esq. | Revised and abridged by the omission of unimportant de- | tails, with an introduction and notes, | by Archibald M'Vickar. | In two volumes. | Vol. I [II]. | New York: | Harper & Brothers, Publishers, Franklin Square. | 1868. Two vols. 18mo, some of the issues forming part of Harpers' series, "The Family Library." Vol. I, pp. i–vi, i*–v*, vii–li, 53–371, 3 maps. Vol. II, pp. i–x, 11–395, 3 maps. > Vol. II, Appendix, "Further enumeration and description of the Quadrupeds, Birds, Fishes, and Plants noticed during the Expedition," pp. 339–378.

Memoranda of the dates of the successive issues, most of which consisted of 250 copies:—September, 1842; January, 1843; May, 1843; January, 1844; July, 1845; April, 1847; May, 1850; August, 1851; June, 1855; April, 1858; November, 1860; February, 1868; March, 1871 (vol. II); April, 1872 (vol. I); February, 1874 (vol. II); December, 1875 (vol. I)—in all, fourteen issues of the whole work, under sixteen different dates.

This is an editorial abridgment, or digest, of the original; the natural-history chapter, besides being relegated to an appendix, is transposed as to its botanical and zoological portions, the botany coming first in the original, the zoology in the present edition; it is, furthermore, like the rest of the work, abridged at the editor's discretion, the omissions being indicated by asterisks; a new feature, moreover, is introduced, being foot-note references to the pages of the body of the work on which the various species were before mentioned. This is a valuable set of cross-references, for the narrative accounts scattered through the work are often no less important than the formal notices themselves.

1843. GAMBEL, W. Descriptions of some new and rare Birds of the Rocky Mountains and California. < *Proc. Acad. Nat. Sci. Phila.*, i, 1843, pp. 259–262.

Picus nuttalii, *Parus montanus*, *Fringilla blandingiana*, *Lophortyx gambelii* "Nutt.", p. 260, spp. nn. Six other species treated.

1843. HALDEMAN, S. S. A | Geography of Pennsylvania: | containing | an account | of the | . . . | to which is appended | . . . | — | By Charles B. Trego, | . . . | — | Philadelphia: | Edward C. Biddle, 6 South Fifth street. | Stereotyped by C. W. Murray & Co. | — | 1843. 1 vol. sm. 12mo. pp. 384, map, cuts.

At pp. 77, 78, occurs a short note on the birds of the State by Professor Haldeman (as appears by Preface, p. 6). Here occurs the first use of the term *Sialia sialis* for the Bluebird.

1843. HOLBÖLL, C. Bemærkninger over nogle Pattedyrs og Fugles Dykkeevne. < *Krøyer's Naturhist. Tidsk.*, iv, 1843, pp. 277, 278.

1843. HOLBÖLL, C. Ornithologiske Bidrag til den grønlandiske Fauna. < *Krøyer's Naturh. Tidsk.*, iv, 1843, pp. 361–457.

An extended and one of the more important of the earlier contributions to this subject, the species, nearly or about 90 in number, being treated in detail. *Corvus corax* var. *littoralis*, n. v., p. 390; *Linota hornnemanni*, p. 398; *Larus brachytarsus*, p. 422, spp. nn.; *Zema* for *Xema*, p. 423.—A German translation, by Dr. Paulsen, was published at Leipsic in 1846, and reissued in 1854. See 1845, same author.

1843. LINSLEY, J. H. A Catalogue of the Birds of Connecticut, arranged according to their natural families. < *Am. Journ. Sci. and Arts*, xliv, No. 2, Apr. 1843, pp. 249–274.

302 spp., including, with those actually detected in the State, those presumed to occur, and also domesticated species; this list is reduced by Merriam's analysis to 239, eliminating 63 spp. See especially MERRIAM, *Trans. Conn. Acad.*, iv, 1874, pp. 144–147. Obituary of the author, *op. cit.*, xlvi, 1844, 216.

1843. REINHARDT, J. Mittheilung über einige bisher in Grönland nicht angetroffene Vögel. < *Oken's Isis*, Bd. xxxvi, 1843, pp. 59, 60.

Kr̆yer's Tidskrift, Bd. iv, Heft 1, 1842, pp. 72–75.—*Tyrannula phœbe*, *Sylvicola coronata*, *Icterus frenatus*, *Sylvia* "*mexicana* Licht."

1843. RICHARDSON, R. Geographical Distribution of Some [North] American Birds. <*Ann. & Mag. Nat. Hist.*, xi, 1843, p. 484.

Merely a list of 12 spp. collected at Fort Simpson, McKenzie's R., lat. 62° 11′ N., by M. McPherson. Nothing on geographical distribution beyond what the collection indicates.

1844. [ANON.] Reise in das innere Nordamerica in den Jahren 1832 bis 1834, von Maximilian, Prinz zu Wied. Coblenz bey Hölscher. I. 1839 gr. 4° 654. II. 1841. 687. Taf. 33. in fol., 48 in gr. fol.; neue Charte nebst vielen Holzschnitten. < *Oken's Isis*, Bd. xxxvii, 1844, pp. 297–299.

1844. [ANON.] Ch. L. Bonaparte, a geographical and comparative List of the Birds of Europe and North-America. London 1838. 8. < *Oken's Isis*, Bd. xxxvii, 1844, p. 604.

1844. [ANON.] A Synopsis of the Birds of North-America by J. J. Audubon. London 1839. 8. 359. < *Oken's Isis*, Bd. xxxvii, 1844, pp. 713–718.

Verzeichniss der Arten.

1844. BAIRD, W. M., *and* BAIRD, S. F. List of Birds found in the vicinity of Carlisle, Cumberland County, Penn., about Lat. 40° 12′ N., Lon. 77° 11′ W. <*Sillim. Am. Journ.*, xlvi, 1844, pp. 261–273.

201 spp., annotated; breeders marked and times of appearance given. Summer visitors, 112; permanent residents, 38; winter visitors, 14; 4 other spp. indicated.

1844. BRANDT, J. F. Eine Liste von Thieren, welche der Gouverneur Kuprianoff aus den russisch americanischen Colonien geschenkt hat, <*Oken's Isis*, Bd. xxxvii, 1844, p. 133.

Bull. Sci. Acad. Imp. Sci. St. Péters., Bd. ix, 1841, p. 281. 10 Arten der Vögel.

1844. DE KAY, J. E. Zoology | of New-York, | or the | New-York Fauna; | comprising detailed descriptions of all the animals hitherto observed within the | State of New-York, with brief notices of those occasionally found near | its borders, and accompanied by appropriate illustrations. | — | By James E. De Kay. | — | Part II. Birds. | Albany: | printed by Carroll and Cook, printers to the Assembly. | .... | 1844. 1 vol. 4to. Eng. title-p., pp. xii, 380, 1 l., pll. col'd 141.

A systematic treatise, the species and higher groups formally characterized, the former treated also with synonymy and general account of habits, distribution, etc. At the conclusion of each genus, the North American species not found in the State are enumerated and briefly characterized. 308 spp. formally treated in the work are figured in colored lithographs, each plate containing two or three figures. The plates are all recognizable illustrations, but not of the highest order of artistic merit, the drawing being especially defective. Appearing at a time when American works on ornithology of similar magnitude were very few, the work held for a time a high place; but its scientific character is not such as to permanently maintain that position. Though still constantly quoted—and properly to be referred to—it has ceased to be regarded as an authority.

1844. GIRAUD, J. P. The | Birds of Long Island. | — | By J. P. Giraud, Jr., | Member of the Lyceum of Natural History, New York, corresponding | member of the Academy of Natural Sciences, Philadelphia, &c. | — | New York: | published by Wiley & Putnam, 161

1844. GIRAUD, J. P.—Continued.

Broadway. | Tobitt's Print, 9 Spruce st. | 1844. 1 vol. 8vo. (4 ll. to a sig.). pp. xxiv, 397.

The book has become scarce. Audubon's classification and nomenclature. Some little synonymy, from Audubon. Short characters of genera and species, and general account of the latter.

1844. LAFRESNAYE, F. de. Oiseaux nouveaux du Mexique. <*Revue Zoologique*, vii, 1844, pp. 41–43.

Merula infuscata, *Saltator magnoides*, *S. icterophrys*, *S. rubicoïdes*, p. 41; *Colaptes mexicanoides*, p. 42.

1844. LICHTENSTEIN, H. Beytrag zur ornithologischen Fauna von Californien, nebst Bemerkungen über die Artkennzeichen der Pelicane und über einige Vögel von den Sandwichinseln. < *Oken's Isis*, Bd. xxxvii, 1844, p. 851.

Aus *Abhand. Berlin. Acad.*, xxii, Jahrg. 1838, erschienen 1839, pp. 417–451, mit 5 Taf. Vultur californianus, Falco (Buteo) ferrugineus, Strix frontalis, Fringilla hudsonia, Pelecanus trachyrhynchus u. s. w. Vergl. 1839, LICHTENSTEIN, H.

1844. [UNKNOWN.] Verzeichniss der in Labrador befindlichen Landsäugethiere und Vögel. < *Bullet. Akad. München*, 1844, pp. 122, 129.

Not seen—title from Giebel.

1845. BAIRD, S. F. Catalogue of Birds found in the neighbourhood of Carlisle, Cumberland County, Pa. < *Lit. Rec. and Journ. Linn. Assoc. of Penna. College*, i, 1845, pp. 249–257.

Annotated list of 202 + 1 spp. Breeding, 104; summer visitors, 66, resident, 38; transitory in spring and autumn, 90; seen in autumn only, 8. Compare *Am. Journ. Sci.* xlvi, 1844, pp. 261–273.

1845. CABOT, S., JR. [List of 5 species of Birds observed to breed on the Magalloway River.] < *Proc. Bost. Soc. Nat. Hist.*, ii, 1845, p. 55.

1845. GAMBEL, W. Descriptions of new and little known Birds, collected in Upper California. < *Proc. Acad. Nat. Sci. Phila.*, ii, 1845, pp. 263–266.

Harpes (g. n.) *redivivus*, p. 264; *Parus inornatus*, p. 265; *Mergulus cassinii*, p. 266, spp. nn.; with note on *Leptosoma longicauda* Sw.

1845. HOLBÖLL, C. Ornithologischer Beytrag zur grönländischen Fauna. < *Oken's Isis*, Bd. xxxviii, 1845, pp. 739–792.

Kröyer's Naturh. Tidsk., Bd. iv, 1843, pp. 361–457, *q. v.*—88 Arten.

1845. STORER, D. H. [Occurrence of Fringilla pinea (*sic*) and Bombycilla garrula in Ohio, in July.] < *Proc. Bost. Soc. Nat. Hist.*, ii, 1845, p. 52.

1846. ABADIE, E. H. List of North American Birds [collected and presented by him to the Institute]. Arranged in accordance with the nomenclature of C. L. Bonaparte. < *Fourth Bull. of the National Institute of Washington*, 1846, pp. 526–530.

Merely a list of names, preceded (p. 525) by letters from Dr. Abadie and Surg. Gen. Lawson relative to the collection.

1846. [ANON.] Ornithologischer Beytrag zur Fauna Grönlands von C. Holböll, übersetzt von Dr. J. H. Paulsen. Leipzig bey E. Fleischer. 1846. 8. 102. < *Oken's Isis*, Bd. xxxix, 1846, p. 794.

1846. GAMBEL, W. Remarks on the Birds observed in Upper California. < *Proc. Acad. Nat. Sci. Phila.*, iii, 1846, pp. 44–48, 110–115, 154–158, 200–205.

Extended field-notes on numerous species, with some little critical matter, constituting one of the most important of our earlier advices on the habits and distribution of California birds.

1846. HOLBÖLL, C. Ornithologischer Beitrag zur Fauna Grönlands. .... Uebersetzt und mit einem Anhange von Paulsen. Leipzig, 1846. 8vo. 2d ed. Leipzig, 1854. pp. 102, pl. 1.

Not seen.—A German translation of "Ornithologiske Bidrag til den grönlandiske Fauna", *Kr¢yer's Naturh. Tidsk.*, 1843, pp. 361–457.

1846. PARKER, S. Journal | of an Exploring Tour | beyond the Rocky Mountains, | under the direction of the | A. B. C. F. M. | containing | [etc.] | with a map of Oregon Territory. | — | By Rev. Samuel Parker, A. M. | — | Fifth edition. | — | Auburn: | J. C. Derby & Co.; | [etc.] | 1846. 1 vol. 12mo. pp. i–xvi, 17–422, map, cut.

Chap. XV, pp. 216–219, brief and unimportant summary of Oregon birds.

1847–49. GAMBEL, W. Remarks on the Birds observed in Upper California, with descriptions of New Species. < *Journ. Acad. Nat. Sci. Phila.*, i, pt. i, Dec. 1847, pp. 25–56, pll. viii, ix; pt. iii, Aug. 1849, pp. 215–229.

176 spp., extensively and variously annotated with descriptive, critical, and biographical matter. The said "new species" were before described in *Proc. Acad. Phila.*, except *Saurophagus bairdii*, p. 40. *Chamæa*, p. 34, *Cleptes*, p. 46, genn. nn. Pl. viii, f. 1, *Parus montanus*; f. 2, *P. inornatus*; f. 3, *Chamæa fasciata*; pl. ix, f. 1, *Zonotrichia chlorura*; f. 2, *Picus "scalaris"* ♂; f. 2, do. ♀ (=*nuttalli*).

1848. ABERT, J. W. Notes of a military reconnoissance, | from Fort Leavenworth, in Missouri, | to | San Diego, in California | .... | By W. H. Emory | .... | Washington: | Wendell and Van Benthuysen, Printers. | — | 1848. 1 vol. 8vo. > Appendix No. 6. Notes of Lieutenant J. W. Abert, pp. 386–405.

An itinerary, with continual reference to plants and animals observed *en route*. The birds collected on this journey perhaps—at any rate by Lieut. Abert in New Mexico about this time—are elaborated by S. F. BAIRD (*Pipilo aberti*, etc.) in H. STANSBURY'S *Rep. Expl. Great Salt Lake*, 1852, *q. v.*

1848. [ANON.] Zoology of New York. Part. II. Birds, by James J. E. de Kay. Albany 1844. 4. 380. tab. 141. < *Oken's Isis*, Bd. xli, 1848, pp. 1035–1040.

Gives a list of the species treated in De Kay's work.

1848. CASSIN, J. Catalogue of Birds collected by Mr. Wm. S. Pease, during the March of the Army of the United States from Vera Cruz to the City of Mexico. < *Proc. Acad. Nat. Sci. Phila.*, iv, 1848, pp. 87–91.

45 spp., with brief critical and field notes. *Micrastur guerilla*, p. 87, sp. n. The article is marked, "To be continued."

1848. GAMBEL, W. Contributions to American Ornithology. < *Proc. Acad. Nat. Sci. Phila.*, iv, 1848, pp. 126–129.

Rostrhamus sociabilis, *Vireo altiloquus*, *Egretta pealei*, p. 127. *Sterna frenata*, p. 128; *S. regia*, p. 128; *S. elegans*, p. 129, spp. nn.

1848. GAMBEL, W. Ueber die in Oberkalifornien beobachteten Vögel. < *Arch. f. Naturg.*, 1848, (1), pp. 82–117.

Aus den *Proc. Acad. Nat. Sci. Phila.*, iii, 1846, *q. v.* Mit Bemerkungen von J. Cabanis.

1848. GIBBES, L. R. Report | on the | Geology of South Carolina; | by | M. Tuomey, [etc.] | — | Columbia, S. C. | Printed and published, for the State, by | A. S. Johnston. | 1848. 1 vol. 4to. 2 p. ll., pp. i–vi, 1–293, i–lvi, maps and pll. > Appendix. Catalogue of the Fauna of South Carolina. (By Lewis R. Gibbes). 2. Class. Birds, pp. iii–viii.

Nominal list of the birds of the State (271 spp. under 111 genera), with short characters of the families and higher groups. The list appears to be a mere

1848. GIBBES, L. R.—Continued.

compilation of species whose range is given as including South Carolina by Audubon in his *Synopsis* of 1839.

1848. MCCALL, G. A. Some notes on Mexican Birds [Orpheus curvirostris, Columba leucoptera], heretofore not fully described. < *Proc. Acad. Nat. Sci. Phila.*, iv, 1848, pp. 63, 64.

1848. REINHARDT, J. [Ueber Vögel aus Grönland.] < *Oken's Isis*, Bd. xli, 1848, pp. 129, 130.

"*K. Dansk. Vid. Selsk. Kopenh.*, vi, 1836-37, pp. xxi-xxii."

1848. REINHARDT, J. Ichthyologische Beyträge zur grönländischen Fauna; Einleitung, enthaltend Zusätze und Veränderungen zu dem Fabricius'schen Verzeichnisse grönländischer Wirbelthiere. < *Oken's Isis*, Bd. xli, 1848, pp. 247-299.

Uebers. aus d. *Kongel. Dansk. Vid. Selsk. Nat. og Math. Afhand.*, Deel vii, 1838, pp. 83-196.—Vögel, pp. 248-258. I. Einleitung, enthaltend Zusätze und Veränderungen zu dem Fabricius'schen Verzeichnisse grönländischer Wirbelthiere. B. Vögel. 1. Zuwachs an Vögelarten, welche Europa und Nordamerika gemeinschaftlich sind—22 Arten. 2. Zuwachs an Vögelarten, welche der östlichen Hemisphäre eigenthümlich angehören—2 Arten. 3. Zuwachs an Vögelarten, welche Nordamerika eigenthümlich sind oder dort vorzugsweise vorkommen—9 Arten. Vergl. 1838, REINHARDT, J.

1848. SIEDHOF, CARL. Naturgeschichtliches aus den Vereinigten Staaten von Nordamerica. < *Oken's Isis*, Bd. xli, 1848, pp. 409-421.

Behandelt *Procellariidæ*, *Turdidæ*, *Corvidæ*, *Fringillidæ* u. s. w.

1849. MCCALL, G. A. Some Notes on Mexican Birds, heretofore not fully described. < *Am. Journ. Sci.*, vii, 1849, pp. 114, 115.

Orpheus curvirostris; *Columba leucoptera*. From *Proc. Acad. Nat. Sci. Phila.*, 1848, pp. 63, 64.

1849. STRACHEY, W. The | Historie of Travaile | into | Virginia Britannia; | expressing the | cosmographie and comodities of the country, | togither with the manners and | customes of the people. | Gathered and observed as well by those who went | first thither as collected by | William Strachey, Gent., | the First Secretary of the Colony. | — | Now first edited from the original manuscript, in the | British Museum, by | R. H. Major, Esq., | of the British Museum. | London: | Printed for the Hakluyt Society. | M.DCCC.XLIX 1 vol. 8vo. pp. i-viii, i-xxxvi, 3 ll., 1-203, map, pll.

Caput x, Of the commodities of the country, &c., pp. 125, 126, mentions various birds—Turkeys, Partridges, Parakitoes, a kind of Wood Pigeon, and others. *Cf.* 1612, SMITH, J.

1849. TOWNSEND, J. K. Ornithology of the United States of North America, or descriptions of the Birds inhabiting the States and Territories of the Union, with an accurate figure of each drawn from nature. Edited by John K. Townsend. Vol. I. Philadelphia: J. B. Chevalier. 1849. 8vo. pp. 12, pll. 4.

Not seen.—"Of this volume and work only the first number of 12 pp. and 4 plates (Cathartes 3 species and Polyborus) was published. It was then superseded by the work of Mr. Audubon, in 8vo."

1849-50. [JARDINE, W.] Ornithology of the Bermudas. < *Jard. Contrib. Orn.*, 1849, pp. 76-87; 1850, pp. 5-14, 35-38, 67.

From notes and observations of Lieut. Wedderburn and H. B. Tristram. General sketch of the subject, and several extended annotated lists of species.

1850. CABOT, J. E. Lake Superior: | its physical Character, Vegetation, and Animals, | compared with those of other and similar Regions. | By | Louis Agassiz. | With a narrative of the Tour. | By | J. Elliot Cabot. | [Woodcut.] | And | contributions by other Scientific Gentlemen. | Elegantly illustrated. | Boston: | Gould, Kendall and Lincoln, | 59 Washington Street. | [Apr.] 1850. 1 vol. 8vo. pp. x + 2, 9–428, pll. > Chap. VIII. Report of the Birds collected and observed at Lake Superior. By J. E. Cabot. pp. 383–385.

Curt general observations; nominal list of 69 spp. *Corvus cedrorum*, n. sp. (error for *Ampelis cedrorum*); *Ampelis cacalotl*, n. sp. (error for *Corvus cacalotl*). There is a German transl. by Zuchold, *Naumannia*, ii, Heft iii, 1852, pp. 64–66.

1850. GRAY, G. R. Narrative | of an | Expedition to the Shores | of | the Arctic Sea | in 1846 and 1847. | — | By John Rae, | Hudson Bay Company's Service, commander of the Expedition. | — | With Maps. | London: | T. & W. Boone, 29, New Bond Street. | — | 1850. 1 vol. 8vo. pp. viii, 247, maps.

Contains, pp. 201–204, "List of the species of Birds Collected by Mr. Rae during his late Expedition, named according to the 'Fauna Boreali-Americana', by G. R. Gray, Esq., F. L. S."; being a nominal list of 81 spp,

1851. BURNETT, W. I. [Notes on the Fauna of the Pine Barrens of upper South Carolina.] < *Proc. Boston Soc. Nat. Hist.*, iv, 1851, pp. 115–118.

List of numerous spp. of birds observed, with a few words on the "conformability of individuals of the Fauna to each other"—whatever that may be.

1851. GURNEY, J. H. Notes on the Zoology of California. < *Zoologist*, ix, 1851, pp. 3297–3299.

Communicated by Mr. Gurney; anonymous (by A. S. Taylor?), from Monterey; brief, no scientific names.

1851. HARRIS, E. List of Birds and Mammalia found on the Missouri River from Fort Leavenworth to Fort Union, at the mouth of the Yellowstone River. < *Fifth Ann. Rep. Smiths. Inst. for* 1850, 1851, pp. 136–138.

Merely a nominal list of about 120 spp.

1851. MCCALL, G. A. Some Remarks on the Habits, &c., of Birds met with in Western Texas, between San Antonio and the Rio Grande, and in New Mexico; with descriptions of several species believed to have been hitherto undescribed. < *Proc. Acad. Nat. Sci. Phila.*, v, 1851, pp. 213–224.

68 spp. *Cyanocorax cassinii*, p. 216; *Otocoris occidentalis*, p. 218; *Carpodacus obscurus*, p. 220, spp. nn.

1852. BAIRD, S. F. Special Session, March, 1851. } Senate. { Executive. No. 3. | — | Exploration and Survey | of the | Valley | of the | Great Salt Lake of Utah, | including | a reconnoissance of a new route through | the Rocky Mountains. | By Howard Stansbury, | Captain Corps Topographical Engineers, | U. S. Army. | Printed by order of the Senate of the United States. | Philadelphia: | Lippincott, Grambo & Co. | 1852. 1 vol. 8vo. pp. 487, pll. > Appendix C.—Birds. By Spencer F. Baird. pp. 314–335.

31 spp. (one, *Sialia macroptera*, p. 314, n. s.), with field-notes and some synonymy, followed by a similar list of 9 spp. of birds collected in New Mexico by Lt. Abert (*Pipilo aberti*, p. 325, n. s.); supplemented by a nominal "List of Birds inhabiting America West of the Mississippi, not described in Audubon's Ornithology" (a few species from east of the Mississippi being included). This list of 153 spp.

1852. BAIRD, S. F.—Continued.

contains a large proportion of synonyms or species not since satisfactorily determined to inhabit North America north of Mexico. The list makes no apparent claim to critical precision, ostensibly showing what species have been ascribed to the region in question, but not necessarily vouching for their occurrence there. "California" long remained a vague term with ornithologists.

1852. BAIRD, S. F. An | Expedition | to the | Valley of the Great Salt Lake | of | Utah: | including | a description of its Geography, Natural History, and | Minerals, and an analysis of its waters: | with an | Authentic Account of the Mormon Settlement. | Illustrated by numerous beautiful plates, | from Drawings taken on the spot. | Also, | A Reconnoissance of a New Route through the | Rocky Mountains, | and | two large and accurate maps of that region. | — | By Howard Stansbury, | Captain Corps Topographical Engineers, United States Army. | — | Philadelphia: | Lippincott, Grambo & Co. | 1852. 1 vol. 8vo. pp. 487, pll.

This is merely a reissue, from the same stereotypes, of the original official publication, under a modified title; the text and illustrations being identical.

1852. BAIRD, S. F. Zoology of the Valley of the Great Salt Lake of Utah. . . . Extracted from Capt. H. Stansbury's Report. . . . 8vo. Philadelphia, 1852.

Not seen in this form, which is merely a pamphlet ed., separate, of Baird's zoological matter, published and distributed in June, 1852.

1852. BREWER, T. M. A few Ornithological Facts, gathered in a hasty Trip through portions of New Brunswick and Nova Scotia, in June, 1850. < *Journ. Boston Soc. Nat. Hist.*, vi, pt. iii, 1852, pp. 297–308.

On habits of *Somateria mollissima*, *Clangula histrionica*, *Thalassidroma leachii*, *Larus argentatus*, *Turdus brunneus* (*pallasi auct. recent.*), *Plectrophanes nivalis*, *Zonotrichia* (*i. e. Spizella*) *monticola*.

1852. BREWER, T. M. [On some Species of North American Birds' Eggs.] < *Proc. Boston Soc. Nat. Hist.*, iv, 1852, p. 167. [*Cf.* p. 168.]

Turdidæ, 2 spp.—*Empidonax* "*traillii*", *Uria brünnichii*.

1852. CABOT, J. E. Bericht über die am Obersee gesammelten und beobachteten Vögel. < *Naumannia*, ii, Heft iii, 1852, pp. 64–66.

Deutsch von Zuchold, aus Louis Agassiz's „Lake Superior", Boston, 1850, *q. v.*

1852. CASSIN, J. [Remarks on the Birds of the Arctic Regions, presented by Dr. E. K. Kane.] < *Proc. Acad. Nat. Sci. Phila.*, vi, 1852, p. 107.

1852. HARTLAUB, G. Ueber einige neue oder weniger bekannte Vögel Amerika's. Aus brieflichen Mittheilungen des Herzogs Paul Wilhelm von Württemberg mitgetheilt und mit Anmerkungen versehen von Dr. G. Hartlaub. < *Naumannia*, ii, Heft ii, 1852, pp. 50–56.

50 spp. Nos. 1–35, Lebensweise, Lokalität. *Falco mercurialis*, *F. plumbiceps*, p. 52; *Strix dominicensis*, *Corvus erythrophthalmus*, p. 54; *Corvus solitarius*, *Picus leucurus*, *Coccyzus rufigularis*, *Saurothera domingensis*, *Coccyzus viridirostris*, p. 55; *Plectrophanes atrolarvatus*, *Certhiola clusiæ*, *Chamaepelia hortulana*, *Tyrannus eximius*, *Dafila caribaea*, p. 56.—"Herz. v. Württ."

1852. LAWRENCE, G. N. Descriptions of new species of Birds of the genera Conirostrum, D'Orb. et Lafr., Embernagra, Less., and Xanthornus, Briss., together with a List of other species not heretofore noticed as being found within the limits of the United States. < *Ann. Lyc. Nat. Hist. New York*, v, 1852, pp. 112–117, pl. v. (Read Apr. 28, 1851.)

1852. LAWRENCE, G. N.—Continued.

C. ornatum, p. 112, pl. v, f. 1; *E. rufivirgata*, p. 112, pl. v, f. 2; *X. affinis*, p. 113.—Concludes with a "List of Birds from Texas with short specific descriptions", giving 11 spp. new to U. S. fauna.

1852. LAWRENCE, G. N. Additions to North American Ornithology. No. 1. < *Ann. Lyc. Nat. Hist. New York*, v, 1852, pp. 117–119. (Read 1851.)

Thalassidroma fregetta, Ceryle americana.

1852. LAWRENCE, G. N. Descriptions of New Species of Birds, of the Genera Toxostoma Wagler, Tyrannula Swainson, and Plectrophanes Meyer. < *Ann. Lyc. Nat. Hist. New York*, v, 1852, pp. 121–123. (Read Sept. 8, 1851.)

Toxostoma Le Contei, Tyrannula cinerascens, p. 121; *P. McCownii*, p. 122.

1852. LAWRENCE, G. N. Additions to North American Ornithology. No. 2. < *Ann. Lyc. Nat. Hist. New York*, v, 1852, pp. 123, 124. (Read 1851.)

Centurus Santa Cruzi, Culicivora atricapilla, Spermophila albigularis.

1852. LAWRENCE, G. N. Ornithological Notes. [No. 1.] < *Ann. Lyc. Nat. Hist. New York*, v, 1852, pp. 220–223.

On 9 spp. of North American birds.

1852. WOODHOUSE, S. W. Descriptions of new species of Birds of the genera Vireo, Vieill., and Zonotrichia, Swains. < *Proc. Acad. Nat. Sci. Phila.*, vi, 1852, pp. 60, 61.

V. atricapilla, Z. cassinii, p. 60.

1853. ALLAN, G. W. "On the Land-birds wintering in the neighbourhood of Toronto." < *Canad. Journ.*, i, 1853, pp. 169–172.

Good running commentary on the whole series, with some descriptive matter.

1853. BONAPARTE, C. L. Notes sur les collections rapportées en 1853 par M. A. Delattre, de son voyage en Californie et dans le Nicaragua. < *Rev. et Mag. de Zool.*, v, 1853, pp. 577–579.

Résumé d'un "remarquable" travail ornithologique lu le 28 Nov. 1853 à l'Acad. de Paris. Première communication, Perroquets et Rapaces, Accipiter fontanieri, A. castanilius, p. 578. Secondo Partie, lu le 5 Déc. 1853, Passereaux cultrirostres. Ostinops guatimozinus, Thilius major, p. 583. Continuation, 19 Déc. 1853, Passereaux conirostres, Chondestes ruficauda, Passerculus alaudinus, p. 583; P. anthinus, Chlorospingus spodocephalus, p. 584, spp. nn. (Plusieures lectures en suite; la lecture du 3 Avril 1854 forme la fin des communications sur ce sujet. Le travail complet se trouve tiré à part, Paris, in-4°, 1854.)

1853. CASSIN, J. [Untitled fasciculus of his Illustrations of the Birds of Texas, California, etc.]

The first part issued of this work was a trial or specimen number, which was cancelled as unsatisfactory, and is therefore scarcely citable. Several bound copies, however, are extant: they bear no title, date, or imprint, and are not paged. They consist of 15 ll. of text and 5 pll., representing *Xanthura luxuosa, Melanerpes formicivorus, Chamæa fasciata, Lophophanes atricristatus*, and *Cyrtonyx massena*. See 1853–55, and 1856, CASSIN, J.

1853. GERHARDT, A. Etwas über den Vogelgesang im südlichen Nord-Amerika. <*Naumannia*, iii, 1853, pp. 37–39.

Kurze unbedeutende Bemerkungen über circa 30 Arten. Einige dieser Arten können nicht identifizirt werden; als, *Regulus mihi, R. americanus, Parus canadensis.*

1853. GERHARDT, A. Die jagdbaren Vögel der Vereinigten Staaten von Nord-Amerika. <*Naumannia*, iii, 1853, pp. 378–391.

Bemerkungen über verschiedene *Gallinæ, Limicolæ*, und *Anseres.*

1853. HARTLAUB, G. [Notiz über das zu erscheinende Werk J. Cassin's: „Birds of Texas, California" u. s. w.] <*J. f. O.*, i, 1853, p. 80.

1853. HEERMANN, A. L. Notes on the Birds of California, observed during a residence of three years in that country. <*Journ. Acad. Nat. Sci. Phila.*, ii, pt. iii, Jan. 1853, Art. xxv, pp. 259–272.

Systematic list of about 130 spp. of land birds, with notes of habits, distribution, etc.

1853. HOY, P. R. Notes on the Ornithology of Wisconsin. <*Proc. Acad. Nat. Sci. Phila.*, vi, 1853, pp. 304–313, 381–385, 425–429.

Annotated systematic list of 283 spp. It was reissued, with additions, in the *Trans. Wisc. State Agric. Soc.* of same date. *Peteria (lege Icteria)*! g. n.

1853. HOY, P. R. Notes on the Ornithology of Wisconsin. < *Trans. Wisconsin State Agric. Soc. for* 1852, vol. ii, (1853), pp. 341–364.

283 spp. From *Pr. Phila. Acad. Nat. Sci.*, 1853, *q. v.*, with additions.

1853. JEFFERSON, T. Notes | on the | State of Virginia, | by | Thomas Jefferson: | illustrated with | a map, including the States of Virginia, Maryland, | Delaware and Pennsylvania. | A new edition, | prepared by the author, | containing notes and plates never before published. | — | J. W. Randolph, | 121 Main street, Richmond, Va. | 1853. 1 vol. 8vo. pp. vi, 1 l., pp. 275, cuts, pll., maps, and fold. tab.

The list of birds, pp. 73–77, is reprinted from one of the old editions without ostensible alteration, being thus one of the most curiously antiquated of late ornithological lists—matching the 1860 ed. of LAWSON'S *Carolina*, for example.

1853. LAWRENCE, G. N. Descriptions of New Species of Birds of the Genera Ortyx Stephens, Sterna Linn., and Icteria Vieillot. <*Ann. Lyc. Nat. Hist. New York*, vi, 1853, pp. 1–4.

Ortyx texanus, p. 1; *Sterna pikei*, p. 3; *Icteria longicauda*, p. 4.

1853. LAWRENCE, G. N. Additions to North American Ornithology.—No. 3. <*Ann. Lyc. Nat. Hist. New York*, vi, 1853, pp. 4–7.

Ephialtes choliba, Puffinus —— ? (*i. e. Adamastor typus* Bp.), *Procellaria capensis.*

1853. LAWRENCE, G. N. Ornithological Notes, No. 2. <*Ann. Lyc. Nat. Hist. New York*, vi, 1853, pp. 7–9.

On *Stercorarius catarractes, Sylvia pensilis, Buteo pennsylvanicus.*

1853. MCCOWN, J. P. Facts and Observations from Notes taken when in Texas. <*Ann. Lyc. Nat. Hist. New York*, vi, 1853, pp. 9–14.

Field-notes on 18 spp.

1853. READ, M. C. Catalogue of the Birds of Northern Ohio. < *Proc. Acad. Nat. Sci. Phila.*, vi, 1853, pp. 395–402.

Shortly annotated list of 145 spp.; land birds only. Marked "To be continued." No continuation found.

1853. THOMPSON, Z. Natural | History of Vermont, | with | numerous Engravings, | and an | Appendix. | 1853. | — | By Zadock Thompson. | — | [State Arms.] | Burlington: | published by the Author. | Stacy & Jameson, Printers. | 1853. 1 vol. "8vo" (half-sheets, 4 ll. to a sig., double columns). 2 p. ll., pp. 1–224, 1–63 (Appendix), with 1½ ll. (Indexes). > Chapter III. Birds of Vermont, pp. 56–112, with additions at pp. 20–28 of the App.

The volume above described appears to be a reissue of Part I (on the Natural History) of the author's "Natural, Civil and Political History of Vermont", which was published in 1842; the copies thus reissued being furnished with a

1853. THOMPSON, Z.—Continued.

new title-page, preface, and a separately-paged Appendix, relating chiefly to natural history. The preface states the circumstances which resulted in this mode of publication. The Appendix may very likely be found separate.—Chap. III is devoted to the Ornithology, and there is supplementary matter of the same kind at pp. 20–28 of the Appendix; 161 spp. altogether (being about three-fourths the avifauna of the State) are described, with brief biographical items, and illustrated by numerous small woodcuts, reduced from various well-known originals. The nomenclature of NUTTALL'S *Manual* is followed.

1853. WOODHOUSE, S. W. 32d Congress, 2d Session. } Senate. { Executive, No. 59. | — | Report of an Expedition | down the | Zuni and Colorado Rivers, | by | Captain L. Sitgreaves, | Corps Topographical Engineers. | — | Accompanied by maps, sketches, views and illustrations. | — | Washington: | Robert Armstrong, Public Printer. | 1853. 1 vol. 8vo. pp. 198, pll., map. > Birds. By S. W. Woodhouse, M. D. pp. 58–105, pll. i–vi.

The report of the Expedition occupies only the first 29 pages, the remainder being devoted to natural history. Ornithology occupies, besides the pages above given, portions of pp. 33–40; 219 spp. are given, with field-notes and some synonymy. As the ground actually passed over is greater than appears from the title of the book (Indian Territory and Texas to California), including portions of different faunal provinces, ornithologists have had frequent occasion to regret that geographical discriminations were not more strictly made. Various species discovered on this expedition were previously named in the Philadelphia Academy's *Proceedings*, vol. vi, excepting *Acanthylis saxatalis* (*sic*), here n. sp., p. 64. Pl. I, *Vireo atricapillus;* II, missing; III, *Struthus caniceps;* IV, *Passerculus cassini;* V, *Ectopistes marginellus;* VI, *Numenius occidentalis.*

1853–54. BONAPARTE, C. L. Notes sur les collections rapportées en 1853, par M. A. Delattre, de son voyage en Californie et dans le Nicaragua. < *Compt. Rend. de l'Acad. Sci.*, xxxvii, 1853, pp. 806–810, 827–835, 913–925; xxxviii, 1854, pp. 1–11, 53–66, 258–266, 378–389, 533–541, 650–665.

The Delattre collections are but a slender thread of text, on which to string an intricate running commentary and criticism on the classification and nomenclature of birds of the groups represented and of others. The paper is a notable one, containing indications of many of the classificatory changes which Bonaparte was in the habit of making toward the end of his life; remarkable for its numerous impressive and authoritative blunders, and the sarcasms directed against Cabanis, who published early parts of the *Mus. Hein.* about the time of BP.'s *Consp. Av.* Many new genera and species are named in this paper, but generally indicated in such loose way as not to show whether they are really new, or lately described by him elsewhere. I indicate the names that may be new: the species are from all parts of the world. The paper is also separately published, 4to, Paris, 1854.

Première communication, 1853, pp. 806–810; Perroquets et Rapaces: Sittace primoli, Psittacula pyrilia, p. 807.—Accipiter (Ieraspizia) fontanieri, Acc. castanilius, p. 810.

2e comm., pp. 827–835; Passereaux cultrirostres.—Garrulus cervicalis, Gazzola typica, p. 828. Physocorax, Amblycorax, Lycocorax, p. 829. Lamprocorax, Hartlaubius, p. 830. Melanopyrrhus, p. 831. Ostinops guatimozinus, p. 833. Bananivorus, p. 834.

3e comm., pp. 913–925; Pass. conirostres. Passer pallasi, Passer confucius, p. 914. Pyrgitopsis, p. 915. Chlorospiza aurantiiventris, Gymnoris petria, p. 916. Auripasser mulleri, Sycalis aureipectus, Metoponia, p. 917. Passerculus alaudinus, Chondestes ruficauda, p. 918. Passerculus anthinus, p. 920. P. geospizopsis, p. 921. Chlorospingus spodocephalus, p. 922. Hemispingus veneris, p. 922. Saltator plumbeus, p. 923. Melopyrrha, p. 924.—Fulica cornuta!, p. 925 (19 Déc. 1853).

1853–54. BONAPARTE, C. L.—Continued.

4º comm., 1854, pp. 1–11; Chanteurs subulirostres. Turdus densus, p. 2; Planesticus, p. 3; Turdus (Plan.) lereboulleti, Plan. albiventer, p. 3; Pl. cabanisi, p. 4; Cichlalopia, Cichlopasser, Agricola, Oreicola, Gervaisia, p. 6; Thamnolæa cæsiogastra, Myrmecocichla quartini, Saxicola stricklandi, p. 7; Bernieria, Drymoipus, p. 11.

5º, pp. 53–66, les mêmes. Leucodioptron "Schiff", p. 55; Malacias, p. 56; Buglodytes (g. n.) albicilius, p. 57; Meropixus, Ixocherus, p. 58; Apalopteron "Schiff", Trichophoropsis typus, p. 59; T. viridis; Troglodytes bonapartei "Mus. Francf.", Campylorhynchus pardus (Verr., descr. nulla), p. 61.

6º, pp. 258–266, Chanteurs curvirostres. Caereba trinitatis, p. 258; Certhiola minima, C. minor, C. albigula, p. 259; Xanthomelus, p. 262; Myzomela melanogastra, p. 263; M. major, Oreosterops, Malacirops, Cyclopterops, p. 264.

7º, pp. 378–389, Chant. dentirostres. Vireolanius icterophrys, V. chlorogaster, p. 380; Basileuterus delatrii, p. 383; B. medius, B. majusculus, B. maximus, Setophaga minor, p. 384 (décrits, "sans les nommer"); Thaumasioptera "Schiff", p. 389 (type inconnu).

8º, pp. 533–541, les mêmes. Calicalicus, p. 535; Balicassius, p. 539; Dicrurus coracinus, Gruncalus lagunensis, p. 540; Lalage uropygialis, p. 541.

9º, pp. 650–665, Chant. fissirostres, etc. Metabolus, Pomarea, Symposiachrus [sic], Hyleota violacea, p. 650; Charidhylas, p. 651; Erythrosterna tricolor (Kuhl et Van Hass. inéd.), Uromitris, Artomyias, Xeocephus, Elminia, Todopsis, p. 652; Dasycephala citreopygia, Myiodynastes luteiventris, p. 657; Picolaptes verreauxorum, Dendrocincla delatrii, Pachyramphus latirostris, p. 658; Procellaria melania, p. 662; Antigone montignesiana, p. 661; Tinamus delatrii, T. julius, p. 663.

1853–55. CASSIN, J. Illustrations of the Birds of California, . . .

These are the dates of issue of the 10 parts of vol. I of the work, completed and bound in 1856, *q. v.* See also 1853, CASSIN, J.

1854. BARRY, A. C. [On the Ornithological Fauna of Wisconsin.] <*Proc. Boston Soc. Nat. Hist.*, v, 1854, pp. 1–13.

Systematic list of 218 spp., annotated. *Anser bruchi*, sp. n.?

1854. BREWER, T. M. [List of Birds, found both in Europe and America, with others not identical, but confounded together from close resemblances.] <*Proc. Boston Soc. Nat. Hist.*, iv, 1854, pp. 324–328.

113 spp., including the stragglers from either country.

1854. COUCH, D. N. Descriptions of New Birds of Northern Mexico. <*Proc. Acad. Nat. Sci. Phila.*, vii, 1854, pp. 66, 67.

Corvus cryptoleucus, *Icterus scottii*, p. 66; *Struthus atrimentalis*, p. 67.

1854. GERHARDT, A. Skizzen aus dem Vogelleben Nordamerika's. <*Naumannia*, iv, 1854, pp. 192–194.

Kurze Bemerkungen über einige Vögel des nördlichen Floridas.

1854. HOPKINS, W. [Letter containing a List of eight Birds of Auburn, N. Y.] <*Proc. Boston Soc. Nat. Hist.*, v, 1854, p. 13.

1854. LECONTE, J. Notice of American Animals, formerly known, but now forgotten or lost. <*Proc. Acad. Nat. Sci. Phila.*, vii, 1854, pp. 8–14.

Of birds, *Vultur sacra*, Bartr.; Ferruginous Woodpecker, Lath.; Florida Pheasant, p. 20 of Stork's Introd., Bartram's Trav.; Norton Sound Bustard, Penn.; Red-billed Heron, Penn.

1854. REINHARDT, J. Notitser til Grönlands Ornithologie. <*Vidensk. Meddel. Naturh. Foren. for Aaret* 1853, 1854, pp. 69–85.

A. Europæiske Arter, 5; B. Nord Amerikaniske Arter, 12—Podiceps holböllii, p. 76; Larus affinis, p. 78, spp. nn. C. Arter, som forekomme i begge Hemisphærer, 1. Arter fundne i Grönland, 107.

1854. Reinhardt, J. Bemerkungen zur Ornithologie Grönlands. < *J. f. O.*, ii, 1854, pp. 423–443.

Aus dem *Videnskabelige Meddelelser fra den naturhistoriske Förening i Kjobenhavn* für das Jahr 1853, 1854, S. 69 u. fgg., *q. v.*—Mit Bemerkungen von J. Cabanis und C. W. L. Gloger.

1854. Wailes, B. L. C. Report | on the | Agriculture and Geology | of | Mississippi. | Embracing a sketch of the | Social and Natural History of the State. | By B. L. C. Wailes, | Geologist of Mississippi; | [etc. etc.] | — | Published by order of the legislature. | — | Lippincott, Grambo, and Co., | for E. Barksdale, | State printer. | [No place of publication given.] | 1854. 1 vol. 8vo. pp. xx, 371, map and pll. > VI. Fauna. > Class II. Aves, or Birds, pp. 317–327.

Very defective nominal list of 89 spp., followed by brief general commentary on the avifauna of the State.

1855. Head, J. F. Some Remarks on the Natural History of the country about Fort Ripley, Minnesota. < *Ninth Ann. Rep. Smiths. Inst.* (*for* 1854), 1855, pp. 291–293.

List of about 60 spp. of birds observed, with brief remarks.

1855. Henry, T. C. Notes derived from observations made on the Birds of New Mexico during the years 1853 and 1854. < *Proc. Acad. Nat. Sci. Phila.*, vii, 1855, pp. 306–317.

Field-notes of habits; 170 spp.

1855. Kennicott, R. Catalogue of Animals observed in Cook County, Illinois. < *Trans. Ill. State Agric. Soc. for* 1853–54, i, 1855, pp. 577–595. > Birds, pp. 580–591.

List, briefly annotated, of 187 spp., to which are added a few species (22) of Middle and Southern Illinois omitted from H. Pratten's List, 1855, *q. v.*

1855. Le Baron, W. Observations upon some of the Birds of Illinois most interesting to the agriculturist. < *Trans. Ill. State Agric. Soc. for* 1853–54, i, 1855, pp. 559–565.

"I have thus hastily run over those families of land birds which are most interesting to the agriculturist, either for the depredations they commit, or for the benefits they confer . . . ."—(Author.)

1855. Pratten, H. Catalogue of South Illinois Birds. A contribution to the Natural History of Illinois. < *Trans. Ill. State Agric. Soc. for* 1853–54, i, 1855, pp. 596–609.

Nominal list of 184 spp. "The following catalogue of the birds of the State is, by no means, a complete one. With the exception of a few of the water birds, which were shot on the Ohio River, they were all obtained in the two counties of Wayne and Edwards."—(Author's preface.)

1855. Sclater, P. L. Note on the Sixteen Species of Texan Birds named by Mr. Giraud of New York, in 1841. < *P. Z. S.*, xxiii, 1855, pp. 65, 66.

Identifications and rectifications of nomenclature in cases of nearly all of them.

1855. Strang, J. J. Some Remarks on the Natural History of Beaver Islands, Michigan. <*Ninth Ann. Rep. Smiths. Inst.* (*for* 1854), 1855, pp. 282–288.

Birds merely mentioned in a paragraph of three lines.

1855. Wolford, H. L. On the Importation and Protection of useful Birds. < *Agric. Rep. U. S. Patent Office for* 1854, 1855, pp. 71– —.

Not seen.

1855–56. GERHARDT, A. Ueber die Lebensweise der Vögel Nordamerikas, welche im Staate Georgia vorkommen. < *Naumannia*, v, 1855, pp. 380–397, 458–469; vi, 1856, pp. 1–18.

Nebst einem Verzeichnisse der Vögel Georgias nach White. 273 Arten.

1856. AUDUBON, J. J. The | Birds of America, | from | drawings made in the United States | and their Territories. | By | John James Audubon, F. R. S., &c., &c. | Vol. I [–VII]. | New York: | Published by V. G. Audubon, | 1856. 7 vols. roy. 8vo. Vol. I, pp. i–viii, 1 l. (signed J. J. Audubon, and dated New York, Nov., 1839), pp. 11–246, pll. 1–70. Vol. II, pp. i-viii, 1 l. (J. J. A., N. Y., August, 1840), 11–199, pll. 71–140. Vol. III, pp. i–viii, 9–233, pll. 141–210. Vol. IV, pp. i–viii, 9–321, pll. 211–280. Vol. V, pp. i–viii, 9–346, pll. 281–350. Vol. VI, pp. i–viii, 9–457, pll. 351–420. Vol. VII, pp. i–x, 11–371, pll. 421–500.

This is the first republication of Audubon's 8vo ed.—a mere reissue, retitled, nos. of vols. and the text and plates the same. It will be observed that the title-page bears no regular publisher's imprint; nor does the person who occasioned the reprint make any explanatory note. There are defective copies of this, without any plates, same date, *q. v.*

1856. AUDUBON, J. J. The | Birds of America, | from | drawings made in the United States | and their Territories. | By | John James Audubon, F. R. S., &c., &c. | Vol. I [II, III, IV, ?, VI, VII]. | New York: | Published by V. G. Audubon, | 1856. Roy. 8vo in size, 4to by printer's sigs., ostensibly in seven vols. Vol. I, pp. iii–viii, 11–246. Vol. II, pp. i–viii, 11–199. Vol. III, pp. i–viii, 9–233. Vol. IV, pp. iii–viii, 9–321. Vol. V missing. Vol. VI, pp. iii–viii, 9–456. Vol. VII, pp. i–viii, 9–372. No plates.

This is the same as the last, *without the plates*. It is a singular circumstance that the *fifth* volume of the set is missing, or at least not in general circulation; I have never seen it. It may have been destroyed by accident, or, possibly, was never reproduced. Owing to this imperfection of the set, and the absence of illustrations, this edition is very cheap—it may be bought for about $1 a volume. My copy has pencilled on the title of vol. VI what seems to be directions to printer for getting up the 1861 ed., New York, Lockwood & Son, as a reissue by John W. Audubon, *q. v.*

1856. [BILLINGS, E.] On some of the Game Birds of Canada. < *Canad. Nat. and Geol.*, i, 1856, pp. 284–305, fig.

Five species. The article is anonymous.

1856. BREWER, T. M. [Note on the occurrence of Plotus anhinga and Tantalus loculator in Illinois.] < *Proc. Boston Soc. Nat. Hist.*, v, 1856, p. 391.

1856. CABANIS, J. Die wissenschaftliche Ausbeute der neuesten Reiseunternehmung des Herzogs P. W. v. Württemberg [in Amerika]. < *J. f. O.*, iv, 1856, p. 336.

1856. CASSIN, J. Illustrations | of the | Birds | of | California, Texas, Oregon, British and | Russian America. | Intended to contain descriptions and figures | of all | North American Birds | not given by former American authors, | and a | General Synopsis of North American Ornithology. | By John Cassin, | Member of the Academy of Natural Sciences of Philadelphia; of the American Philosophical | Society; of the Horticultural Society of Pennsylvania; of the National Institute; | of the South Carolina Natural History Society; of the New

1856. CASSIN, J.—Continued.

York | Lyceum of Natural History; of the Natural History | Society of Montreal, etc. etc. | 1853 to 1855. | — | Philadelphia: | J. B. Lippincott & Co. | 1856. 1 vol. large 8vo size, 4to by sigs. pp. viii, 298, pll. 50.

Issued in 10 "parts", with continuous pagination, during the years specified; collected in 1 vol. in 1856, with preface, contents, and index, forming the "first series" of a work discontinued at this point. Text technical, descriptive, biographical (from field-notes of various correspondents, especially G. A. McCall and A. L. Heermann), and general. 50 spp. described and figured in colors; besides which all the then known North American species of *Parinæ*, *Falconidæ*, *Strigidæ*, and *Fissirostres* are systematically treated in the "General Synopsis", interpolated at pp. 17–20, 85–120, 175–197, 235–256. New species are:—*Falco nigriceps*, p. 87 (Dec., 1853); *Falco polyagrus*, pp. 88, 121, pl. 16; *Buteo insignatus*, pp. 102, 198, pl. 31 (March, 1854). See 1853, and 1853–55, CASSIN, J.

1856. CASSIN, J. Notes on North American Birds in the Collection of the Academy of Natural Sciences, Philadelphia, and National Museum, Washington. < *Proc. Acad. Nat. Sci. Phila.*, viii, 1856, pp. 39–42.

Critical and descriptive. 7 spp. *Spizella breweri*, p. 40; *Anser albatus*, p. 41, spp. nn.

1856. CASSIN, J. Ornithology of the United States, and British and Russian America. < *United States Magazine*, iii, 1856, pp. 18–29, 109–114, 205–207, 481–484, figg. 13.

In consequence of the suspension of the *Magazine*, the contemplated series of articles was discontinued with the fourth instalment. The matter consists of a general popular, but strictly scientific, account of *Cathartidæ* and *Falconidæ*.

1856. HAYMOND, R. Birds of South-eastern Indiana. < *Proc. Acad. Nat. Sci. Phila.*, viii, 1856, pp. 286–298.

Systematic list of 139 spp., shortly annotated.

1856. HENRY, J. Registry of Periodical Phenomena. < *Tenth Ann. Rep. Smiths. Inst.* (*for* 1855), 1856, pp. 259–263.

Includes a list of 16 spp. of birds whose movements, etc., should be noted in connection with observation of meteorological phenomena.

1856. KENNERLY, C. B. R. { 33d Congress, 2d Session. } Senate. { Ex. Doc. No. 78. } | — | Reports | of | Explorations and Surveys, | to | ascertain the most practicable and economical route for a railroad | from the | Mississippi River to the Pacific Ocean. | Made under the direction of the Secretary of War, in | 1853–4, | according to acts of Congress of March 3, 1853, May 31, 1854, and August 5, 1854. | — | Volume IV. | — | Washington: | Beverley Tucker, printer. | 1856. 4to. > Part VI. Report on the Zoology of the Expedition. No. I. Field Notes and Explanations. By C. B. R. Kennerly, M. D., Physician and Naturalist to the Expedition. pp. 1–17.

This is simply a preliminary account of the game animals of Lt. Whipple's Route near the thirty-fifth parallel, with a summary statement of the zoological collections. A note appended states that "the remainder of the Zoological Report [of this particular Route] will appear in a subsequent volume". It appeared in the x. vol. of the series of *P. R. R. Reports*, entirely superseding the present article, which is scarcely citable for any practical purposes.

1856. MCCLINTOCK, [F. L.] Extracts from Captain M'Clintock's Diary (plate IV). < *Nat. Hist. Rev.* (*Pr. Soc.*), iii, 1856, pp. 40–42.

Kept in the Arctic regions during the search for Sir John Franklin. Many allusions to the birds.

1856. MÖSCHLER, —. Notiz zur Ornithologie Grönlands. < *J. f. O.*, iv, 1856, p. 335.

Alca cirrhata, Totanus flavipes, Picus auratus.

1856. MÜLLER, J. W. VON. Einige Notizen über die Vögel des höchsten Nordens von Amerika. < *J. f. O.*, iv, 1856, pp. 304–306.

Von Dr. Elisha Kent Kane dem Verfasser mitgetheilt.

1856. PUTNAM, F. W. Catalogue of the Birds of Essex County, Massachusetts. < *Proc. Essex Inst.*, i, 1856, pp. 201–231.

Annotated list of 235 spp. with 10 additional stragglers; and appendix of 48 spp. given on other authority, of Massachusetts birds not observed in Essex County. The classification and nomenclature accord with AUDUBON'S *Synopsis*.

1856. SCLATER, P. L. Note on the Sixteen Species of Texan Birds named by Mr. Giraud of New York, in 1841. < *Ann. Mag. Nat. Hist.*, (2), xvii, 1856, pp. 426–427.

From *P. Z. S.*, March 27, 1855, pp. 65, 66, *q. v.*

1856. SCLATER, P. L. Catalogue of the Birds collected by M. Auguste Sallé in Southern Mexico, with Descriptions of New Species. < *P. Z. S.*, xxiv, 1856, pp. 283–311, pll. (Aves) cxx, cxxi.

233 spp., with brief miscellaneous annotations. *Certhiola mexicana*, p. 286; *Anabates rubiginosus, A. cervinigularis*, p. 288; *Anabazenops variegaticeps, Xenops mexicanus*, p. 289; *Sclerurus mexicanus, Scytalopus prostheleucus*, p. 290; *Parus meridionalis*, p. 293; *Formicarius moniliger*, p. 294; *Todirostrum cinereglare*, p. 295; *Tyrannula sulphureipygia*, p. 296; *Elaenia variegata*, p. 297; *Pipra mentalis*, p. 299, pl. cxxi; *Myiadestes unicolor*, p. 299. The other plate represents *Granatellus sallæi*.

1857. BAIRD, S. F. American Oology. < *Edinb. New Philso. Journ.*, new ser., v, 1857, p. 374.

Extract from a letter relating to T. M. Brewer's work.

1857. BEESLEY, T. Geology | of | the County of Cape May, | State of | New Jersey. | [State arms.] | Trenton: | printed at the office of the True American. | 1857. 1 vol. 8vo. Frontisp., pp. 211, map. > Birds, pp. 138–145.

At the pp. indicated, a "Catalogue of the Birds of the County of Cape May. By Thomas Beesley, Esq." 196 spp., briefly annotated; the breeders marked with an asterisk (*).

1857. BLAKISTON, T. Notes of a Naturalist on his Passage towards the Far West. < *Zoologist*, xv, 1857, pp. 5840–5843.

Voyage from England to York Factory, Hudson's Bay.

1857. BRENDEL, F. Vögel der Umgegend Peorias in Illinois. < *Zeitschr. gesammt. Naturw.*, ix, 1857, pp. 420–425.

„Nachfolgend theile ich das Verzeichniss der in der Gegend von Peoria von mir bis jetzt beobachteten Vögel nebst einigen speziellen Untersuchungen mit, indem ich mir vorbehalte, dasselbe durch spätere Mittheilungen zu vervollständigen."—Namenverzeichniss von circa 80 Arten, nebst kurzen Bemerkungen; auch anatomische Notizen über *Haliætus leucocephalus* und *Buteo borealis*.

1857. BREWER, T. M. Smithsonian Contributions to Knowledge. | — | North American | Oölogy. | By | Thomas M. Brewer, M. D. | — | Part I.—Raptores and Fissirostres. | — | [Accepted for publication, February, 1856.] | [Washington: 1857.] 1 vol. 4to. pp. viii, 132, pll. v (figg. 74). (Forming part of vol. xi, 1859, of *Smithsonian Contributions to Knowledge*. Originally thus published separately, 1857.)

1857. BREWER, T. M.—Continued.

The foregoing is the title of the work as it appears in the separate copies. The fuller title of the work, as one of the papers of the *Smithsonian Contributions*, is, "North American Oölogy; being an account of the geographical distribution of the Birds of North America during their breeding season, with figures and descriptions of their eggs." The work was not continued beyond Part I, which treats of the *Raptores* and the "Fissirostres" (*i. e., Caprimulgidæ, Hirundinidæ, Cypselidæ*, and *Alcedinidæ*). The text is a general account of the habits, to some extent, of the species during the breeding season, as well as of the subjects mentioned in the full title, and includes a copious synonymy; no descriptive, technical, or critical matter. Sixty species are treated, the eggs of 49 of them being beautifully figured, printed in colors, and touched up by hand—74 figures, on 5 plates—too many to be here recapitulated. Only a small part of the edition, however, is in colors; the regular ed. in the *S. I. Cont.* being plain, printed from another set of stones. The work is notable as the only purely oölogical treatise of any extent as yet produced in America, and is the standard as far as it goes. It contains a fair proportion of blunders, most of which have been exposed in the critiques the work has called forth from time to time, though no one has been more zealous than the author in setting them right. The egg of *Buteo borealis?* is figured for that of *Astur atricapillus;* of *Accipiter cooperi?* for that of *Falco columbarius;* of *Hirundo lunifrons?* for that of *H. thalassina;* and that figured as *Archibuteo ferrugineus* is doubtful. *Cf.* BREWER, *Am. Nat.*, i, 1867, pp. 121–123; COUES, *B. Colorado*, i, 1878, 421.

1857. BREWER, T. M. List and Descriptions of Eggs obtained in California by E. Samuels. < *Proc. Boston Soc. Nat. Hist.*, vi, 1857, pp. 145–149. [See p. 66.]

Sixteen specimens.

1857. BRYANT, H. A list of Birds observed at Grand Manan and at Yarmouth, N. S., from June 16 to July 8, 1856. < *Proc. Boston Soc. Nat. Hist.*, vi, 1857, pp. 114–123. [Continued by discussion, by several ornithologists, on various points relative to North American Ornithology, pp. 123–125.]

55 spp.; fully annotated.

1857. BRYANT, H. [Remark on the early migration of certain American Birds this year.] < *Proc. Boston Soc. Nat. Hist.*, vi, 1857, p. 170.

1857. CASSIN, J. Notes on the North American species of Archibuteo and Lanius, and description of a new species of Toucan, of the genus Selenidera, Gould. < *Proc. Acad. Nat. Sci. Phila.*, ix, 1857, pp. 211–214.

Archibuteo, 3 spp.; *Lanius*, 5 spp.; *Selenidera spectabilis*, p. 214.

1857. D'URBAN, W. S. M. Notes on the Land Birds observed round [*sic*] Montreal during the winter of 1856-7. < *Canad. Nat. & Geol.*, ii, 1857, pp. 138–145.

Field-notes on a score of species.

1857. D'URBAN, W. S. M. Notice of the Occurrence of the Pine Grosbeak and Bohemian Chatterer, near Montreal. < *Canad. Nat. & Geol.*, i, 1857, pp. 465–472, fig.

More extended notice, with figure of the latter, by E. Billings, appended.

1857. GIEBEL, C. G. Bemerkungen zu Vorigem [d. h. Vögel der Umgegend Peorias in Illinois von Fr. Brendel] über Cathartes aura, Falco albicilla, F. lagopus und F. buteo. < *Zeitschr. gesammt. Naturw.*, ix, 1857, pp. 426–433.

„Die vorstehenden Mittheilungen Herrn Brendels . . . veranlassen mich aus Chr. L. Nitzsch' handschriftlichem Nachlass hier die anatomischen Notizen theils zur Ergänzung, theils zur weitern Vergleichung der nächst verwandten Arten anzuschliessen." Vergl. 1857, BRENDEL, F.

1857. HADFIELD, H. W. Notes and Remarks on the Storm Petrel, American Bittern, Night Hawk, &c. [*i. e.*, other birds of Canada.] < *Zoologist*, xv, 1857, pp. 5798–5804.

1857. HOLMES, E. Birds [of North America] injurious to Agriculture. < *Rep. U. S. Patent Office, Agric., for* 1856, 1857, pp. 110–160, pll. 15–46.

1857. KNEELAND, S. On the Birds of Keweenaw Point, Lake Superior. < *Proc. Boston Soc. Nat. Hist.*, vi, 1857, pp. 231–241.

Partially annotated list of 147 spp.—Musical notation of song of *Zonotrichia albicollis*.

1857. NEWBERRY, J. S. 33d Congress, 2d Session. } House of Representatives. { Ex. Doc. No. 91. | — | Reports | of | Explorations and Surveys, | to | ascertain the most practicable and economical route for a railroad | from the | Mississippi River to the Pacific Ocean. | Made under the direction of the Secretary of War, in | 1854–5, | according to Acts of Congress of March 3, 1853, May 31, 1854, and August 5, 1854. | — | Volume VI. | — | Washington: | A. O. P. Nicholson, printer, | 1857. | 4to. > Part IV. Zoological Report. No. 2. Report upon the Zoology of the Route. By J. S. Newberry, M. D. > Chapter II Report upon the Birds, pp. 73–110, pll. xxvi and xxxiv, with pp. i–iv of index.

This well-written and interesting article gives the ornithological results of the California and Oregon routes; it consists of field-notes on a large number of species. *Picus williamsonii*, p. 89 (*descr. nulla*), pl. xxxiv, up. fig., sp. n. Pl. xxxiv, low. fig., *Icteria longicauda*. Pl. xxvi, *Pica nuttallii*.

1857. REINHARDT, J. Naturhistoriske Bidrag | til | En Beskrivelse af Grønland, | af | J. Reinhardt, J. C. Schiødte, O. A. L. Mørch, C. F. Lutken, | J. Lange, H. Rink. | — | Særskilt Aftryk af Tillæggene til „ Grønland, geographisk og statistisk beskrevet" af H. Rink. | — | Kjøbenhavn. | Louis Kleins Bogtrykkeri. | 1857. 1 vol. 12mo size (8 ll. to a sig.). 2 p. ll., pp. 3–172, map. > Tillaeg Nr. 1, Fortegnelse over Grønlands Pattedyr, Fugle og Fiske, af Professor J. Reinhardt. pp. 3–27.

Fugle, pp. 12–20.—Nominal list of 111 sp., slightly annotated.

The same list, somewhat modified, was translated and published in Anton von Etzel's Grönland geographisch und statistisch beschrieben. Aus dänischen Quellenschriften. Stuttgart, J. G. Cotta'scher Verlag, 1860.

1857. SCLATER, P. L. On some New Species of Birds collected by M. Auguste Sallé in Southern Mexico. < *Ann. Mag. Nat. Hist.*, (2), xix, 1857, pp. 418–423.

From *P. Z. S.*, July 8, 1856. See 1856, SCLATER, P. L., *bis*.

1857. SCLATER, P. L. On Parus meridionalis and some other species mentioned in the Catalogue of Birds collected by M. Sallé in Southern Mexico. < *Ann. Mag. Nat. Hist.*, (2), xx, 1857, pp. 381, 382.

From *P. Z. S.*, May 12, 1857.

1857. SCLATER, P. L. List of Birds collected by Mr. Thomas Bridges, Corresponding Member of the Society, in the Valley of San José, in the State of California. < *P. Z. S.*, xxv, 1857, pp. 125–127.

33 spp., shortly annotated.

1857. SCLATER, P. L. List of additional species of Mexican Birds, obtained by M. Auguste Sallé from the environs of Jalapa and S. Andres Tuxtla. < *P. Z. S.*, xxv, 1857, pp. 201–207, woodcc.

62 spp., annotated.—*Camptostoma imberbe*, gen. sp. n., p. 203.

1857. SCLATER, P. L. On a Collection of Birds made by Signor Matteo Botteri in the vicinity of Orizaba in Southern Mexico. < *P. Z. S.*, xxv, 1857, pp. 210–215.

38 spp., shortly annotated. *Neochloe* (g. n.) *brevipennis*, p. 213; *Zonotrichia botterii*, p. 214, spp. nn.

1857. SCLATER, P. L. On a Collection of Birds received by M. Sallé from Southern Mexico. < *P. Z. S.*, xxv, 1857, pp. 226–230.

29 spp., annotated. *Diplopterus excellens*, p. 229, sp. n.

1858. BAIRD, S. F., CASSIN, J., *and* LAWRENCE, G. N. 33d Congress, 2d Session. } House of Representatives. { Ex. Doc. No. 91. | — | Reports | of | Explorations and Surveys, | to | ascertain the most practicable and economical route for a railroad | from the | Mississippi River to the Pacific Ocean. | Made under the direction of the Secretary of War, in [1853–6, | according to Acts of Congress of March 3, 1853, May 31, 1854, and August 5, 1854. | — | Volume IX. | — | Washington: | A. O. P. Nicholson, printer. | 1858. 4to. Subtitled as follows: Explorations and Surveys for a railroad route from the Mississippi River to the Pacific Ocean. | War Department. | — | Birds: | by Spencer F. Baird, | Assistant Secretary Smithsonian Institution. | With the co-operation of | John Cassin and George N. Lawrence. | — | Washington, D. C. | 1858. pp. i-lvi, 1-1005. (No illustrations.)

This work is "Part II" of the "General Report upon the Zoology of the Several Pacific Railroad Routes" (Part I being the corresponding report on the Mammals, which constitutes the viii. vol. of the series, and Parts III and IV, on Reptiles and Fishes respectively, being contained in the x. vol. of the series). The preface states:—"The present report is a continuation of a systematic account of the vertebrate animals of North America, collected or observed by the different parties organized under the direction of the War Department for ascertaining the best route for a railroad from the Mississippi river to the Pacific ocean. The collections of these expeditions having been deposited with the Smithsonian Institution by the War Department, in compliance with an act of Congress, the undersigned was charged by the Secretary of the Institution with the duty of furnishing the series of general reports upon them, as called for by the Department. The account of the mammals having been published in 1857, that of the birds is herewith furnished, prepared according to the plan announced in the preface to that volume. As in the volume on the mammals, by the insertion of the comparatively few species not noticed by the expeditions, this report becomes an exposition of the present state of our knowledge of the birds of North America, north of Mexico. This addition, while rendering the work more valuable to the reader, was absolutely necessary for the proper understanding of the western fauna, the species of which are generally so closely allied to the eastern forms as to require in most cases more minute and detailed descriptions of the latter than have been published. Certain portions of the report have been prepared by Mr. John Cassin, of Philadelphia, and Mr. George N. Lawrence, of New York, well known as the leading ornithologists of the United States. Mr. Cassin has furnished the entire account of the Raptores, from p. 4 to 64, of the Grallæ from p. 689 to 753, and of the Alcidæ from p. 900 to 918, in all about 135 pages. Mr. Lawrence has written the article on the Longipennes, Totipalmes, and Colymbidæ from page 820 to 900, making 80 pages." The preface continues with recapitulation of the different surveying parties and less official or wholly individual sources whence the collections upon which the report is based were received.

Contents:—Various titles, etc., pp. i–xvi. Table of the Higher Groups, pp. xvii–xxiv. List of Species, pp. xxv–lvi, 738 in number, with geographical distribution.

1858. BAIRD, S. F., CASSIN, J., *and* LAWRENCE, G. N.—Continued.

General text, pp. 1–920. Appendix A, Additional Remarks on North American Birds, pp. 921–925; Appendix B, Birds found at Fort Bridger, Utah, pp. 926, 927; Appendix C, List of Authorities referred to (an important piece of bibliography), pp. 928–954; Indexes, pp. 955–1005.

This report is complete in itself, and entirely independent of the various special articles by different naturalists of the several Surveys; an elaborate formal treatise on all the birds of North America north of Mexico. It represents the most important single step ever taken in the progress of American ornithology in all that relates to the technicalities. The nomenclature is entirely remodelled from that of the immediately preceding Audubonian period, and for the first time brought abreast of the then existing aspect of the case. It was adopted by the Smithsonian Institution, and thousands of separately printed (4to and 8vo) copies of the "List of Species" were distributed during succeeding years to institutions and individuals; the names came at once into almost universal employ, and so continued, with scarcely appreciably diminished force, until about 1872. The synonymy of the work is more extensive and elaborate and more reliable than any before presented; the compilation was almost entirely original, very few citations having been made at second-hand, and these being indicated by quotation-marks. The general text consists of diagnoses or descriptions of each species, with extended and elaborate criticisms, comparisons, and commentary. Of the general character of the specific determinations, it may be said that the authors' tendency was to push specific discriminations beyond a point now usual; so that, though the work contains notably few purely nominal species, it has many that have proven to be simply geographical races. Tabular lists of the specimens examined, with localities where procured, collector, date of collection, and many measurements, are given. The work includes no biographical matter, nor is it illustrated.

The appearance of so great a work, from the hands of a most methodical, learned, and sagacious naturalist, aided by two of the leading ornithologists of America, exerted an influence perhaps stronger and more widely felt than that of any of its predecessors, Audubon's and Wilson's not excepted, and marked an epoch in the history of American ornithology. The synonymy and specific characters, original in this work, have been used again and again by subsequent writers, with various modification and abridgment, and are in fact a large basis of the technical portion of the subsequent *History of North American Birds* by BAIRD, BREWER, and RIDGWAY. Such a monument of original research is likely to remain for an indefinite period a source of inspiration to lesser writers, while its authority as a work of reference will always endure.

Many of the novelties secured by the different surveying parties were previously described; the following are the genn. and spp. nn. of this work:—*Picoides dorsalis*, p. 100; *Sphyrapicus*, p. 101; *S. nuchalis*, p. 103; *Hylatomus*, p. 107; *Colaptes hybridus*, p. 122; *Nephocaetes*, p. 142; *Tyrannus couchii*, p. 175; *Empidonax difficilis*, p. 198; *E. wrightii*, p. 200; *Turdus aliciæ*, p. 217; *Protonotaria*, p. 239; *Oporornis*, p. 246; *Oroscoptes*, p. 346; *Catherpes*, p. 356; *Thriothorus bewickii* Couch, p. 362; *Parus occidentalis*, p. 391; *Carpodacus californicus*, p. 413; *Plectrophanes melanomus*, p. 436; *Centronyx*, p. 440; *Poocœtes*, p. 447; *Melospiza*, p. 476; *M. heermanni*, p. 478; *M. gouldii*, p. 479; *Passerella schistacea*, p. 490; *Cyanospiza*, p. 500; *Pipilo megalonyx*, p. 515; *Corvus americanus* var. *floridanus*, p. 568; *C. caurinus*, p. 569; *Cyanocitta woodhouseii*, p. 585; *Ortalida McCallii*, p. 611; *Pediocaetes*, p. 625; *Oreortyx*, p. 642; *Grus fraterculus* Cass., p. 656; *Hydranassa*, p. 660; *Herodias egretta* var. *californica*, p. 667; *Ardea wurdemanni*, p. 669; *Florida*, p. 671; *Aegialitis nivosa* Cass., p. 696; *Arquatella*, p. 714; *Tringa cooperi*, p. 716; *Micropalama*, p. 726; *Heteroscelus*, p. 734; *Anser frontalis*, p. 762; *Aristonetta*, p. 793; *Bucephala*, p. 795; *Pelionetta trowbridgii*, p. 806; *Podiceps occidentalis* Lawr., p. 894; *P. clarkii* Lawr., p. 895.

Many copies of this volume were reissued in 1860 under an entirely different title (*Birds of America*, etc., *q. v.*), accompanied by a second vol. of pll.—these plates being all those which belonged to the various detached ornithological reports of the several naturalists of the Pacific Railroad Surveys, those of the Mexican Boundary Survey, and many new ones, raising the total to 100.

1858. BAIRD, S. F., CASSIN, J., *and* LAWRENCE, G. N.—Continued.

In closing a short notice of this the General Report on the Ornithology of the Pacific Railroad Surveys, it will be well to recapitulate the several special associated reports, scattered through the series of volumes in such irregular fashion that their accurate quotation becomes a matter of the greatest difficulty,—in fact, I have never seen a full and precise citation made by any one not thoroughly conversant with the composition of the whole publication. In the present Bibliography, I have adopted the method of quoting in full the general title-page of the whole volume in which each report appears, following this with quotation of the special sub-title page of the zoological portion, and this with quotation of the particular title of the ornithological article, giving the pp. and pll. only of the latter.

Bird-matter is found in the following volumes:—

Vol. IV, 1856. Part VI, No. 1. KENNERLY'S *Report*, pp. 1–17 (being preliminary to his final report, which appeared in vol. X, 1859).

Vol. VI, 1857. Part IV, No. 2. NEWBERRY'S *Report*, pp. 73–110, +i–iv, pll. (WILLIAMSON'S & ABBOT'S *Routes in California and Oregon*).

Vol. IX, 1858. BAIRD'S *General Report*, occupying the whole vol.

Vol. X, 1859. The first half of this singularly composite vol. is occupied with BAIRD'S *General Report on Reptiles of all the Surveys* (plates only—text never published), and GIRARD'S *General Report on the Fishes* (text and plates). The rest consists of a great number of detached deferred zoological articles, huddled together pell-mell, belonging to reports which constitute previous vols. of the series; among them are four bird-articles, as follows:—BAIRD'S, *on Birds of Gunnison's and Beckwith's Routes near 38th, 39th, and 41st parallels*, being No. 2, pp. 11–16, pll., and belonging to the report published in the ii. vol. of the series; KENNERLY'S, *on Birds of Whipple's Route near 35th parallel*, being No. 2, pp. 19–35, pll., of Part VI of report published in the iv. vol. of the series; HEERMANN'S, (1), *on Birds of Parke's Route near 32d parallel*, being No. 1, pp. 9–20, pll., of report published in the vii. vol. of the series; HEERMANN'S, (2), *on Birds of Williamson's Routes in California near 35th and 32d parallels*, being No. 2, pp. 29–80, pll., of Part IV of report published in the v. vol. of the series. The discontinuous pagination of this vol. X, and the fact that the "Parts" which appear to refer to it really refer to portions of previous vols., render it impossible to cite these articles except by reference to the routes by name, or to the printer's signatures at bottom of the pages.

Vol. XII, 1860. Book II. Part III, No. 3, Chaps. I, II. pp. 140–290, pll. COOPER & SUCKLEY'S, *on Birds of Governor Stevens's Route near 47th and 49th parallels.*

1858. BAIRD, S. F. Birds found at Fort Bridger, Utah. < *Pacific R. R. Rep.*, ix, 1858, App. B, pp. 926, 927.

Merely a list of 104 spp., collected by C. Drexler.

1858. BAIRD, S. F. Catalogue | of | North American Birds, | chiefly in the Museum of the | Smithsonian Institution. | By | Spencer F. Baird, | Assistant Secretary of the Smithsonian Institution. | — | Washington: Smithsonian Institution. | October, 1858. 4to, paper. 1 p. l., pp. xvii–lvi.

Separate reissue, *v. l. p.*, with new title-page, of pp. xvii–lvi of the author's main work. Besides the list of 788 spp., with habitats, these sheets contain a table of the higher groups, list of extralimital species (23) which are included in the work, and of those (31) claiming to be North American, but not so identified, and a summary of the total number as variously given by Wilson, Bonaparte, and Audubon. The species being all numbered, the brochure was much used for several years for practically convenient reference to the species by number.

1858. BRIDGES, T. Notes on Californian Birds. With Remarks by P. L. Sclater. < *P. Z. S.*, xxvi, 1858, pp. 1–3, pl. (Aves) cxxxi.

11 spp.—*Melanerpes rubrigularis* Scl., p. 2, pl. cxxxi, sp. n., = *Picus williamsoni* Newb., = *P. thyroideus* Cass., ♂.

1858. HAYDEN, F. V. Preliminary Report of Explorations in Nebraska and Dakota, in the years 1855–'56–'57, by Lieut. G. K. Warren, ... Washington, 1858. 8vo. pp. 125.

This title is taken from a separate repaged reprint, made in 1875, of Hayden's article in Warren's Report. The article, whether of 1858 or of 1875, contains an extensive List of the Birds of the Upper Missouri Region, substantially the same as that published in the 4to Report, Philadelphia, 1862, *q. v.*

1858. HENRY, T. C. Descriptions of new Birds from Fort Thorn, New Mexico. < *Proc. Acad. Nat. Sci. Phila.*, x, 1858, pp. 117, 118.

Toxostoma crissalis, *Junco dorsalis*, p. 117.

1858. KITTLITZ, F. H. VON. Denkwürdigkeiten | einer Reise | nach dem russischen Amerika, nach Micronesien | und durch Kamtschatka Von F. H. v. Kittlitz. | — | Erster [zweiter] Band. | — | Gotha. | Verlag von Justus Perthes. | 1858. 2 vols. 8vo. Vol. I, pp. xvi, 384. Vol. II, 2 p. ll., pp. 464. Plates and cuts in both vols.

Contains much interesting matter relating to natural history, and ornithology in particular, *passim*. Several birds are figured in the text. *Cf. J. f. O.*, 1859, pp. 45–51.

1858. KITTLITZ, F. H. VON. Nachträgliche Bemerkungen zu den im Verlage von Justus Perthes in Gotha so eben erschienenen: „Denkwürdigkeiten einer Reise nach dem russischen America, nach Mikronesien und durch Kamtschatka." < *J. f. O.*, 1858, vi, pp. 387–390.

Nebst Anmerkungen des Herausgebers.

1858. SAUSSURE, H. DE. Observations | sur les | Mœurs de divers Oiseaux | du Mexique | par M. H. de Saussure | — | Genève | Imprimerie Ramboz et Schuchardt | Rue de l'Hôtel-de-Ville, 78 | — | 1858 8vo. pp. 55, pl. 1.

Reissued repaged from the *Bibl. Univ. Genève*, 1858–59 ?, *q. v.*

1858. SCLATER, P. L. Notes on some Birds from Southern Mexico. < *P. Z. S.*, xxvi, 1858, pp. 95–99.

14 spp., with critical annotation.

1858. SCLATER, P. L. On a Collection of Birds received by M. Auguste Sallé from Oaxaca in Southern Mexico. < *P. Z. S.*, xxvi, 1858, pp. 293, 294.

5 spp. *Chlorospingus castaneicollis*, p. 293; *Calliste cyanotis*, p. 294, spp. nn.

1858. SCLATER, P. L. On a Collection of Birds received by M. Auguste Sallé from Oaxaca in Southern Mexico. < *P. Z. S.*, xxvi, 1858, pp. 294–305.

86 spp., with critical annotation. *Petrochelidon swainsoni*, p. 296; *Troglodytes brunneicollis*, p. 297; *Formicivora boucardi*, p. 300; *Empidonax bairdi*, p. 301; *Pipilo albicollis*, p. 304, spp. nn.; *Chamaeospiza*, p. 304, g. n.

1858. XANTUS, J. Descriptions of two new Species of Birds from the vicinity of Fort Tejon, California. < *Proc. Acad. Nat. Sci. Phila.*, x, 1858, p. 117.

Tyrannula hammondii, *Vireo cassinii*.

1858–59 ? SAUSSURE, H. DE. Observations sur les Mœurs de Divers Oiseaux du Mexique. < *Arch. des Sc. Phys. et Nat.* (*Bibl. Univ. Genève*), 2e sér., i, 1858, pp. 331–338, pl. iv; iii, 1858, pp. 14–25, 168–182; iv, 1859 (pub. 1858 ?), pp. 22–41.

I. Les Pics ("Colaptes rubricatus", i. e. Melanerpes formicivorus). II. Les Colibris. III. Les Oiseaux de Proie (Vauteurs, Aigles). IV. Les Troupiales (Icteridæ). V. Les Couroucous. VI. Sur les Anis, les Hoccos et les Pénélopes.

1858–59. WIED, MAX, PRINZ VON. Verzeichniss der Vögel, welche auf einer Reise in Nord-America beobachtet wurden. <*J. f. O.*, vi, 1858, pp. 1–29, 97–124, 177–205, 257–284, 337–354, 417–445; vii, 1859, pp. 81–96.

A systematic account of very many species, with much descriptive matter, but chiefly valuable for the indications of geographical distribution and accounts of habits. *Buteo gutturalis*, p. 17; *Sylvicola missuriensis*, p. 117; *Linaria americana*, p. 338, spp. nn.

1859. [ANON.] Birds of North America. <*Harper's New Monthly Mag.*, vol. xviii, 1859, p. 692.

Advance notice of a proposal to republish Audubon's Birds of North America; with comments upon Audubon and his labors.

1859. BAIRD, S. F. 34th Congress, 1st Session. } House of Representatives. { Ex. Doc. No. 135.

| — | Report | on the | United States and Mexican Boundary Survey, | made under | the direction of the Secretary of the Interior, | by William H. Emory. | Major First Cavalry and United States Commissioner. | — | Volume II. | — | Washington: | Cornelius Wendell, Printer. | 1859. 4to. > Part II. Zoology of the Boundary. > [2d article.] Birds of the Boundary, by Spencer F. Baird, Assistant Secretary of the Smithsonian Institution, with notes by the Naturalists of the Survey. pp. 32, 1 l., pll. col'd 25.

The whole work is in 2 vols. 4to, but the 2d vol. is usually found bound in 2 "parts", each of which is separately titled and paged; and the several articles in each part are moreover separately titled and paged. Vol. I is the general official report, with which we have here nothing to do. Vol. II, Part I, is the Botany of the Boundary, to which no fewer than seven different title-pages are prefixed in the copy examined. Vol. II, Part II, contains four independent, separately paged and titled articles on the Zoology of the Boundary, the second of which relates to the birds. This article is merely a list of the specimens collected by the Commission, under the names given by Prof. Baird in the ix. vol. of the *Pacific Railroad Reports* (where the species are all worked up), with field-notes on some of them by various naturalists of the Survey. The text is therefore comparatively unimportant; but it is accompanied by 25 beautiful colored plates, which confer great value. Pl. i, *Scops McCalli*; ii, *Trogon "mexicanus"*; iii, f. 1, *Picus scalaris*; f. 2, *P. nuttalli*; iv, *Centurus flaviventris*; v, f. 1, 2, *Selasphorus platycercus*; 3, *Trochilus alexandri*; vi, *Chordeiles texensis*; vii, *Ceryle americana*; viii, *Momotus coeruleiceps*; ix, f. 1, *Pachyrhamphus aglaiæ*; f. 2, *Bathmidurus major*; f. 3, *Myiarchus lawrencii*; x, *Tyrannus vociferans*; xi, f. 1, *T. couchii*; f. 2, *T. melancholicus*; f. 3, *Empidonax obscurus*; xii, *Toxostoma lecontei*; xiii, *T. curvirostris*; xiv, *T. longirostris*; xv, f. 1, *Lophophanes wollweberi*; f. 2, *Aegithalus flaviceps*; f. 3, *Psaltriparus melanotis*; xvi, f. 1, *Chrysomitris mexicanus*; f. 2, 3, *Spermophila morelettii*; xvii, f. 1, *Spizella atrigularis*; f. 2, *Embernagra rufivirgata*; xviii, f. 1, *Cyanoloxia parellina*; f. 2, *Spiza versicolor*; xix, f. 1, *Icterus parisorum*; f. 2, *I. wagleri*; xx, *Quiscalus macrourus*; xxi, *Cyanocitta woodhousei*; xxii, f. 1, *C. sordida*; f. 2, *C. ultramarina*; xxiii, *Columba flavirostris*; xxiv, *Ortyx texanus*; xxv, *Dendrocygna autumnalis*. This series of illustrations subsequently formed part of the atlas of 100 plates of BAIRD'S *Birds of North America* (1860). In view of the several different title-pages preceding this article, it will be advisable to quote it simply as "BAIRD, U. S. and Mex. Bound. Surv. ii, pt. ii, Birds, p. —, pl. —."

1859. BAIRD, S. F. 33d Congress, 2d Session. } Senate. { Ex. Doc. No. 78. | — | Reports | of Explorations and Surveys, | to | ascertain the most practicable and economical route for a railroad | from the | Mississippi River to the Pacific Ocean. | Made under the direction of the Secretary of War,

1859. BAIRD, S. F.—Continued.

in | 1853–6, | according to acts of Congress of March 3, 1853, May 31, 1854, and August 5, 1854. | — | Volume X. | — | Washington: | Beverley Tucker, printer. | 1859. 4to. > Route near the 38th and 39th parallels, explored by Captain J. W. Gunnison, and near the 41st parallel, explored by Lieutenant E. G. Beckwith. Zoological Report. > No. 2. Report on Birds collected on the Survey. By S. F. Baird. pp. 11–16, pll. xii, xiii, xiv, xv, xvii, xxxii, xxxv.

The report to which this deferred zoological article pertains is in vol. II of the series. The article is brief and unimportant, consisting of a short description of most of the 25 spp. and list of specimens collected. Pll. xii, xiii, *Buteo swainsonii*; pl. xiv, *Buteo calurus*; pl. xv, *B. oxypterus*; pl. xvii, *Chordeiles henryi*; pl. xxxii, *Eremophila cornuta* var.; pl. xxxv, *Sialia occidentalis*.

1859. BAIRD, S. F. Smithsonian Miscellaneous Collections. | — | Catalogue | of | North American Birds, | chiefly in the Museum of the | Smithsonian Institution. | By | Spencer F. Baird. | [First octavo edition.] | [Medallion.] | Washington: | Smithsonian Institution. | 1859. 8vo. 2 p. ll., pp. 19 + 2.

Constituting article IV of vol. II of the series of *Smiths. Misc. Coll.*, but chiefly known as a separate publication. It is a reprint, with some changes, from the 4to list which formed part of vol. IX, *Pacific Railroad Reports*, and which was published separately in 1858. There are also other separate copies, printed on one side of the paper only, for labelling. Ostensibly 738 spp., but some of the numbers are duplicated; names only. The supplementary 2 pages are an alphabetical list of N. A. genera.

1859. BAIRD, S. F. Notes on a collection of Birds made by Mr. John Xantus, at Cape St. Lucas, Lower California, and now in the Museum of the Smithsonian Institute. < *Proc. Acad. Nat. Sci. Phila.*, xi, 1859, pp. 299–306.

42 spp. *Myiarchus pertinax*, pp. 301, 303; *Cardinalis igneus*, *Pipilo albigula*, *Chamæpelia* (*passerina?* var.) *pallescens*, p. 305, spp. nn.

1859. BLAKISTON, T. Scraps from the Far West. < *Zoologist*, xvii, 1859, pp. 6318–6325, 6373–6376.

Cursory field-notes on birds observed from York Factory, Hudson's Bay, to Fort Carlton on the Saskatchewan.

1859. BLAND, —. List of Birds of Bermuda. <(*Thirteenth*) *Ann. Rep. Smiths. Inst.* (*for* 1858), 1859, pp. 286–289.

Nominal list of 114 spp., with 12 'probabilities', and a note adding 35 spp. from Wedderburn and Hurdis (in JONES'S *Nat. in Bermuda*, 1859, *q. v.*). The list includes 4 European spp.

1859. BRYANT, H. [Notes on some of the Birds observed in East Florida.] <*Proc. Boston Soc. Nat. Hist.*, vii, 1859, pp. 5–21.

Extended field observations of habits; much description of nesting, eggs, etc.

1859. BRYANT, H. A List of Birds seen at the Bahamas, from Jan. 20th to May 14th, 1859, with Descriptions of New or Little Known Species. <*Proc. Boston Soc. Nat. Hist.*, vii, 1859, pp. 102–134.

Trochilus bahamensis, p. 106; *Empidonax bahamensis*, p. 109; *Hirundo cyaneoviridis*, p. 111, *Lanivireo crassirostris*, p. 112; *Mimus bahamensis*, p. 114, spp. nn.; *Sula elegans*, n. sp. proband., p. 125. The article is extensively annotated with field observations of habits, especially such as relate to breeding, oölogical and anatomical descriptions, etc.

1859. COTTLE, T. A List of Birds found in Upper Canada. <*Canad. Nat. and Geol.*, iv, 1859, pp. 231–233.

Nominal list of 146 spp., with 7 short foot-notes.

1859. DES MURS, O. Observations sur les Mœurs de divers Oiseaux du Mexique, par M. de Saussure. <*Rev. et Mag. de Zool.*, xi, 1859, pp. 274–276.

Résumé du mémoire dans la Bibliothèque Universelle de Genève, Archives, 1858,—observations concernant principalement une espèce de Pic, à tort nommée *Colaptes rubricatus* (i. e. *Melanerpes formicivorus*).

1859. DES MURS, O. North American Oology; by Thomas M. Brewer, m. d. <*Rev. et Mag. de Zool.*, xi, 1859, pp. 450–454.

Revue de la première partie de cet ouvrage.

1859. D'URBAN, W. S. M. Observations on the Natural History of the Valley of the River Rouge, and surrounding townships in the Counties of Argenteuil and Ottawa. <*Canad. Nat. and Geol.*, iv, 1859, pp. 252–276.

Contains, pp. 258–268, an annotated list of 75 spp. of birds.

1859. EDITORIAL. [S. F. Baird's résumé of ornithological field operations in progress in America, etc.] <*Ibis*, i, 1859, pp. 334, 335.

1859. FOWLER, S. P. Ornithology of the United States, its Past and Present History. <*Proc. Essex Inst.*, ii, 1859, pp. 327–334.

A short sketch of the subject; with reference to Capt. J. Smith, A. Wilson, T. Morton, W. Wood, J. Josselyn, P. Collinson, La Hontan, Du Pratz, Hennepin, Charlevoix, Catesby, Kalm, Carver, Loskiel, Bonaparte, DeKay, and sundry later writers.

1859. GOSSE, P. H. Letters from Alabama, | (U. S.) | chiefly relating to | Natural History. | — | By | Philip Henry Gosse, F. R. S. | — | London: Morgan and Chase, | Tichborne court, 280, High Holborn. | 1859. 1 vol. 16mo (half-sheets?, 8 l. to a sig.). pp. xii, 306, with 1 l. advts., many woodcc.

These letters appeared before in the form of contributions to a magazine entitled "The Home Friend", from which they are reproduced, with revision. Though chiefly relating to insects, the author of the "Birds of Jamaica" is in this volume delightfully ornithological *passim*. I know of no other work treating exclusively of the birds of this State. Many of the cuts represent birds.

1859. "A. G." Death of Mr. Nuttall. <*Am. Journ. Sci.*, xxviii, 1859, p. 444; xxix, 1860, pp. 441, 442.

Born at Settle, Yorkshire, 1784; died September 10, 1859, near Preston, in Lancashire, *æt.* 75.—The notice is by Asa Gray.

1859. HADFIELD, [H.] W. Birds of Canada observed near Kingston during the Spring of 1858. <*Zoologist*, xvii, 1859, pp. 6701–6709, 6744–6752.

Original observations on the times of appearance, habits, etc., of a large number of species.

1859. HADFIELD, H. [W.] Birds of Canada observed near Kingston during the latter part of the Summer and in the Autumn of 1857. <*Zoologist*, xvii, 1859, pp. 6781–6787; concluded, xxii, 1864, pp. 9297–9310.

1859. HEERMANN, A. L. 33d Congress, 2d Session. } Senate. { Ex. Doc. No. 78. | — | Reports | of | Explorations and Surveys, | to | ascertain the most practicable and economical route for a railroad | from the | Mississippi River to

1859. HEERMANN, A. L.—Continued.

the Pacific Ocean. | Made under the direction of the Secretary of War, in | 1853–6, | according to acts of Congress of March 3, 1853, May 31, 1854, and August 5, 1854. | — | Volume X. | — | Washington: | Beverley Tucker, printer. | 1859. 4to. >Route near the thirty-second parallel, from the Rio Grande to the Pimas Villages, explored by Lieutenant J. G. Parke, Corps of Engineers, 1853–'54. >No. 1. Report upon Birds collected on the Survey. By A. L. Heermann, M. D. pp. 9–20 + 1 l., pll. i, iv, vi.

A deferred article, pertaining to a report given in a previous volume. It consists of specific chars. of, and field-notes on, 25 spp. Pl. i, *Hypotriorchis femoralis*. Pl. iv, f. 1, *Passerculus alaudinus*; f. 2, *Peucæa cassini*. Pl. vi, *Actidurus nævius*.

1859. HEERMANN, A. L. 33d Congress, 2d Session. } Senate. { Ex. Doc. No. 78. | — | Reports | of | Explorations and Surveys, | to | ascertain the most practicable and economical route for a railroad | from the | Mississippi River to the Pacific Ocean. | Made under the direction of the Secretary of War, in | 1853–'6, | according to Acts of Congress of March 3, 1853, May 31, 1854, and August 5, 1854. | — | Volume X. | — | Washington: | Beverley Tucker, printer. | 1859. 4to. >Routes in California, to connect with the Routes near the thirty-fifth and thirty-second parallels, explored by Lieut. R. S. Williamson, Corps of Top. Eng., in 1853. Zoological Report. >Part IV. No. 2. Report upon Birds Collected on the Survey. By A. L. Heermann, M. D. pp. 29–80, pl. ii, iii, v, vii–x.

A deferred article pertaining to the Report in vol. V of the series, being a portion of Part IV of that Report. It consists of extended field-notes on a large number (about 140) of species. Pll. ii, iii, *Buteo elegans*; pl. v, *Myiarchus mexicanus* (of Baird); pl. vii, *Strepsilas melanocephalus*; pl. viii, *Podiceps californicus*; pl. ix, *Podilymbus lineatus*; pl. x, *Phalacrocorax penicillatus*.

1859. HENRY, T. C. Catalogue of the Birds of New Mexico as compiled from Notes and Observations made while in that Territory, during a residence of Six Years. <*Proc. Acad. Nat. Sci. Phila.*, xi, 1859, pp. 104–109.

198 spp., partially annotated.

1859. JONES, J. M., WEDDERBURN, J. W., *and* HURDIS, J. L. The | Naturalist in Bermuda; | a sketch of the | Geology, Zoology, and Botany, | of that remarkable group of islands; | together with | meteorological observations. | By John Matthew Jones, Esq., | (Of the Middle Temple.) | Assisted by | Major J. W. Wedderburn (Late 42nd Roy. Highlanders), and J. L. Hurdis, Esq. | — | With a map and illustrations. | — | [Quotation.] | London: | Reeves & Turner, 238, Strand. | — | 1859. 1 vol. 12mo size. pp. i–xii, 1–200, map, 10 cuts in text.

More than half of this interesting treatise is devoted to birds: it is claimed to contain "the first account ever submitted to the public of the Natural History of the Bermudas", and certainly is the best authority we have on the birds of those islands. Birds occupy pp. 23–97; the account consisting of "Notes and Observations on the resident and migratory Birds of the Bermudas", by Major Wedderburn, pp. 23–56, and "Further Notes and Observations" on the same, by J. L. Hurdis, pp. 56–97. The occurrence of the European *Alauda arvensis* makes perhaps the most notable single item; other European stragglers are *Saxicola*

1859. JONES, J. M., WEDDERBURN, J. W., *and* HURDIS, J. L.—Continued.
œnanthe and *Crex pratensis*. Unexpected American stragglers from the North are *Nyctea nivea*, *Lanius borealis*, and *Plectrophanes nivalis*. There is an extended account of the migrations of *Charadrius virginicus*, and an essay on the "Cahow" of Smith (1624), which is identified as *Puffinus obscurus*. (*Cf. J. f. O.*, 1859, pp. 211–226.)

1859. KENNERLY, C. B. R. 33d Congress, 2d Session. } Senate. { Ex. Doc. No. 78. | — | Reports | of | Explorations and Surveys, | to | ascertain the most practicable and economical route for a railroad | from the | Mississippi River to the Pacific Ocean. | Made under the direction of the Secretary of War, in | 1853–6, | according to acts of Congress of March 3, 1853, May 31, 1854, and August 5, 1854. | — | Volume X. | — | Washington: | Beverley Tucker, printer. | 1859. 4to. > Route near the thirty-fifth parallel, explored by Lieutenant A. W. Whipple, topographical engineers, in 1853 and 1854. > No. 3. Report on Birds collected on the Route. pp. 19–35, pll. xviii–xx, xxii, xxvii, xxix–xxxi, xxxiii, xxxvi, xxxvii.
This is a deferred article belonging to the Report which appeared in the iv. vol. of the series; it consists of field-notes on 88 spp., with list of specimens of each collected. Pl. xviii, up. fig., *Ochætura vauxii*; low. fig., *Panyptila melanoleuca*. Pl. xix, *Atthis costæ*. Pl. xx, *Corvus cacalotl*. Pl. xxii, *C. cryptoleucus*. Pl. xxvii, f. 1, *Carpodacus cassini*; f. 2, *Melospiza fallax*. Pl. xxix, *Pipilo mesoleucus*. Pl. xxx, *P. oberti*. Pl. xxxi, *Pyranga hepatica*. Pl. xxxiii, f. 1 *a–b*, *Polioptila plumbea*; f. 2, *Psaltriparus plumbeus*; f. 3, *Sitta aculeata*; f. 4, *S. carolinensis*. Pl. xxxvi, *Centurus uropygialis*. Pl. xxxvii, *Grus fraterculus*.

1859. LE MOINE, J. M. Notes on Land and Sea Birds observed around Quebec. < *Canad. Nat. and Geol.*, iv, 1859, pp. 411–414.
Very light.

1859. MARTENS, E. VON. Die Vögel der Bermuda-Inseln, nach Wedderburn und Hurdis. < *J. f. O.*, vii, 1859, pp. 211–226.
A full account, compiled from J. M. JONES's *Naturalist in Bermuda*, 1859, *q. v.*

1859. MÜLLER, J. W. VON. Reisen in Mexico. < *J. f. O.*, vii, 1859, pp. 226–237.
Reisebeschreibung, nebst zufälliger Erwähnung der Vögel.

1859. MURRAY, A. Contributions to the Natural History of the Hudson's Bay Company's Territories. Part III.—Aves. < *Edinb. New Philos. Journ.*, new ser., ix, 1859, pp. 221–231, pl. iv, figg. 1–3.
Systematic annotated list of 82 spp. *Bernicla leucolæma*, p. 226, pl. iv, f. 1, n. sp. Heads of *B. canadensis* (f. 2) and *B. hutchinsi* (f. 3) on the same plate.

1859. SAUSSURE, H. DE. Note sur quelques Oiseaux du Mexique. < *Rev. et Mag. de Zool.*, xi, 1859, pp. 117–122, pl. 3.
I. Description de trois espèces nouvelles—*Falco ferruginosus*, p. 117, pl. 3, f. 1; *Acanthylis semicollaris*, p. 118, pl. 3, f. 6; *Quiscalus sumichrasti*, p. 119, pl. 3, f. 3, 4.
II. De la couleur des yeux, des pattes et du bec chez divers oiseaux de l'Amérique équinoxiale.

1859. SCLATER, P. L. [Exhibition of two rare Arctic Birds—Colymbus adamsi and Eurinorhynchus pygmæus.] < *P. Z. S.*, xxvii, 1859, p. 201.

1859. SCLATER, P. L. On a Collection of Birds from Vancouver's Island. < *P. Z. S.*, xxvii, 1859, pp. 235–237.
35 spp., briefly annotated.

1859. SCLATER, P. L. On a Series of Birds collected in the vicinity of Jalapa, in Southern Mexico. < *P. Z. S.*, xxvii, 1859, pp. 362–369.

226 spp., briefly annotated. *Cotyle fulvipennis*, p. 364; *Dendrornis erythropygia*, p. 366; *Piaya thermophila*, p. 368, spp. nn.

1859. SCLATER, P. L. List of Birds collected by M. A. Boucard in the State of Oaxaca in South-western Mexico, with Descriptions of New Species. < *P. Z. S.*, xxvii, 1859, pp. 369–393.

236 spp., briefly annotated. *Campylorhynchus jocosus*, *Thryothorus felix*, p. 371; *Cyphorinus pusillus*, p. 372; *Hylophilus ochraceiceps*, p. 375; *Cœreba carneipes*, p. 376; *Oryzoborus funerea*, p. 378; *Spermophila corvina*, p. 379; *Dendromanes anabatinus*, *D. homochrous*, p. 382; *Lipangus unirufus*, p. 385; *Columba nigrirostris*, p. 390; *Tinamus boucardi* "Sallé", p. 391; *Tinamus meserythrus*, p. 392, spp. nn.

1859. WILLIS, J. R. List of Birds of Nova Scotia. Compiled from notes by Lieutenant Blakiston, R. A., and Lieutenant Bland, R. E., made in 1852–1855, by Professor J. R. Willis, of Halifax. < (*Thirteenth*) *Ann. Rep. Smiths. Inst.* (*for* 1858), 1859, pp. 280–286.

205 spp.; the list briefly annotated.

1859. XANTUS, J. Catalogue of Birds collected in the vicinity of Fort Tejon, California, with a description of a new species of Syrnium. < *Proc. Acad. Nat. Sci. Phila.*, xi, 1859, pp. 189–193.

Nominal list of 144 spp. *Syrnium occidentale*, p. 193. The identifications are understood to have been made by S. F. Baird.

1859. XANTUS, J. Descriptions of supposed new species of Birds from Cape St. Lucas, Lower California. < *Proc. Acad. Nat. Sci. Phila.*, xi, 1859, pp. 297–299.

Picus lucasanus, *Campylorhynchus affinis*, *Harporhynchus cinereus*, p. 298; *Brachyrhamphus hypoleucus*, p. 299.

1860. AMBROSE, I. [Extract from a letter containing an account of a visit to Green Island, off the mouth of Chester Bay, Nova Scotia.] < *Proc. Boston Soc. Nat. Hist.*, vii, 1860, pp. 367–369.

The whole island was found perforated by Petrels; species not mentioned.

1860. BAIRD, S. F. The Birds | of | North America; | the descriptions of species based chiefly on the collections | in the | Museum of the Smithsonian Institution. | By | Spencer F. Baird, | Assistant Secretary of the Smithsonian Institution, | with the co-operation of | John Cassin, | of the Academy of Natural Sciences of Philadelphia, | and | George N. Lawrence, | of the Lyceum of Natural History of New York. | With an Atlas of One Hundred Plates. | Text. | — | Philadelphia: | J. B. Lippincott & Co. | 1860. 4to. 2 p. ll. (Title, Advt.), pp. i–lvi, 1–1005. Atlas, pll. 100.

A reissue, retitled, of vol. IX, *Pacific Railroad Reports*, 1858, *q. v.* The main text is identical, apparently from the same plates; and so the preliminary matter seems to be, excepting new Title, Advt., Explanation of Plates (pp. vii–xii), and Systematic List of Illustrations (pp. xiii–xv).—*Helminthophaga virginiæ*, p. xi (pl. 79, f. 1), sp. n. The Atlas consists of 100 pll., about half of which are new, the remainder being from the *Pacific Railroad Reports* and *Mexican Boundary Survey*, retouched and relettered, in some cases redrawn, for this edition.

1860. COINDE, J. P. Notice sur la faune ornithologique de l'île de Saint-Paul, suivie de l'énumération de quelques espèces d'insectes (Coléoptères) des Aléoutiennes et du Kamtschatka. < *Rev. et Mag. de Zool.*, xii, 1860, pp. 396–405.

9 spp.—*Larus warnecki*, p. 401, sp. n.

1860. COLLINS, W. O. Report of Senate Select Committee, upon Senate Bill No. 12, "For the protection of Birds and Game". < *Fifteenth Ann. Rep. Ohio State Board of Agric.*, 1860, pp. 381–390.

Facts in the natural history of the birds, upon which are based recommendations for legislative action.

1860. COOPER, J. G., *and* SUCKLEY, G. 36 Congress, 1st Session. } Senate. { Ex. Doc. | — | Reports | of | Explorations and Surveys, | to | ascertain the most practicable and economical route for a railroad | from the | Mississippi River to the Pacific Ocean. | Made under the direction of the Secretary of War, in | 1853–5, | according to acts of Congress of March 3, 1853, May 31, 1854, and August 5, 1854. | — | Volume XII. Book II. | — | Washington: | Thomas H. Ford, printer. | 1860. 4to. > Part III. Route near the forty-seventh and forty-ninth parallels, explored by I. I. Stevens, Governor of Washington Territory, in 1853–'55. Zoological Report. > No. 3. Report upon the Birds collected on the Survey. Chapter I. Land Birds, by J. G. Cooper, M. D. Chapter II. Water Birds, by Dr. G. Suckley, U. S. A. pp. 140–291, pll. xi, xvi, xxi, xxiii, xxiv, xxv, xxviii, xxxviii.

The whole vol. in which this article appears is oftenest cited as Vol. XII, Part II; but its proper quotation is Vol. XII, Book II, as per general title-page. The zoology, which occupies most of the vol., is officially Part III of Gov. Stevens's Report, Part I (General, constituting Book I) and Part II (Botanical, constituting a portion of Book II) of which do not relate to zoology. Part III, then, of Book II, of Vol. XII, is the zoological portion of this report, No. 3 being ornithological. It consists of field-notes by Cooper and Suckley, on the birds, accompanied by the specific characters and some synonymy of each species, copied from Baird's General Report (Vol. IX). Each author contributes his field-notes over his initials to both chapters; this singular division of the ostensible authorship of the Land and Water Birds having resulted from some personal matters of which I am cognizant, but which need not be here published. Following the general account is a compiled "List of Birds heretofore reported as found in the northwest part of America, but of which no specimens have been procured by recent explorers" (pp. 288–291). The species figured are the following:—Pl. xi, *Falco nigriceps*; pl. xvi, *Buteo cooperi*; pl. xxi, *Corvus carnivorus*; pl. xxiii, *C. americanus*; pl. xxiv, *C. caurinus*; pl. xxv, *Pica hudsonica*; pl. xxviii, f. 1, *Junco dorsalis*, f. 2, *Passerculus sandwichensis*; pl. xxxviii, *Podiceps occidentalis*.

Copies of this book were reissued under an entirely different title (*Natural History of Washington Territory*, etc.); but they are printed from the same plates, and are substantially identical. The copies examined, both of the original and of the reissue, date 1860; but I think other impressions of the original date 1859.

1860. EDITORIAL. [Notice of Ornithological Operations in North America. Note on Amazilia xantusi (♀, = Heliopædica castaneocauda ♂), and other Trochilidæ lately described by G. N. Lawrence.] < *Ibis*, ii, 1860, pp. 309, 310.

1860. FOWLER, S. P. Changes produced by Civilization in the Habits of our [Massachusetts] common Birds. < *Proc. Essex Inst.*, iii, 1860, pp. 31–36.

1860. JACKSON, R. M. S. The | Mountain. | By | R. M. S. Jackson, M. D., [etc.] | [Quotation.] | Philadelphia: | J. B. Lippincott & Co. | 1860. 1 vol. 12mo. > Chapter V. The Fauna of the Mountain, pp. 288–427: Mammals, pp. 289–316; Birds, pp. 317–360.

A work of some curiosity, perhaps never before cited in any ornithological connection. Contains a long and fully annotated list of the Birds of the Alleghany Mountains of Pennsylvania.

1860. JOSSELYN, J. New England's Rarities discovered: by John Josselyn, Gent.—With an Introduction and Notes, by Edward Tuckerman, A.M., [etc.] < *Trans. and Coll. Amer. Antiquarian Soc.*, iv, 1860, pp. 105–238.

See the original, 1672. This is a literal reprint, indicating pagination, and giving what seems to be a facsimile of the title of the original. In this volume, the bird-matter, at pp. 142–148, is fully annotated by the editor.

1860. LAWSON, J. The | History of Carolina, | containing the | exact description | and | Natural History of that country, [etc.] | — | By John Lawson, | Gent. Surveyor-General of North Carolina. | — | London: | Printed for W. Taylor at the Ship, and F. Baker at the | Black Boy, in Pater-Noster Row, 1714. | — | Raleigh [North Carolina]: | printed by Strother and Marcom at their book and job office, | 1860. 1 vol. 12mo. pp. i–xviii, 19–390.

This late reprint I have been unable to compare with the original. It has the air of being faithfully done, though the text is literally modernized. pp. 222–248, "Birds of Carolina", a nominal list of upward of 100 spp., followed by a commentary on many of them. See the early eds., 1709, 1714, 1718.

1860. LE MOINE, J. M. Birds | observed round Quebec. | By J. M. Le Moine, Esq. | After the System of the Smithsonian Institution. 8vo. pp. 3.

List, with brief annotation.

1860. LE MOINE, J. M. Ornithologie | du | Canada. | — | Quelques groupes | d'après la nomenclature du | Smithsonian Institution, | de Washington. | — | Par J. M. Le Moine, Avocat. | — | 1ère Partie. | — | Québec: imprimé par E. R. Fréchette, | 21, Rue la Montagne. | — | 1860. 1 vol. 12mo. 1 p. l., pp. i–iv, 1–95.

Contenant les oiseaux de proie et les palmipèdes.

1860. MCILWRAITH, T. List of Birds observed in the vicinity of Hamilton, C. W., arranged after the system of Audubon. < *Canad. Journ.*, v, 1860, pp. 387–396.

Annotated.—Substantially the same as that published afterward in the *Proc.* (*Comm.*) *Essex Inst.*, v, 1866, pp. 79–96.

1860. REINHARDT, J. [Ueber die Vögel Grönlands u. s. w.] < *Anton von Etzel's Grönland geogr. und statist. beschrieben. Aus dänischen Quellenschriften. Stuttgart*, 1860.

Not seen—title from Gill and Coues. Said to be a translation of Reinhardt's article of 1857, *q. v.*, without the references to the authorities.

1860. SAUSSURE, H. DE. Skildringer af Fuglelivet i Mexiko. < *Tidssk. Pop. Fremst. af Naturv.*, 2en Række, ii, 1860, pp. 220–257.

Bibl. Univ. de Genève, 1858.—See 1858, and 1858–59?, REINHARDT, J., and 1859, DES MURS, O.

1860. SCLATER, P. L. Notes on a Collection of Birds from the Vicinity of Orizaba and neighbouring parts of Southern Mexico. < *P. Z. S.*, xxviii, 1860, pp. 250–254, pl. (Aves) clxiii.

44 spp. *Coccothraustes maculipennis*, p. 251, pl. clxiii; *Tinamus robustus*, p. 253.

1860. SCLATER, P. L. [Exhibition of some bird skins procured by Capt. Herd at Fort Churchill, Hudson's Bay.] < *P. Z. S.*, xviii, 1860, p. 418.

1860. VENNOR, H. G., JR. Notes on Birds wintering in and around Montreal. From Observations taken during the winters of 1856–57–58–59–60. < *Canad. Nat. and Geol.*, v, 1860, pp. 425–430.

Annotation on 29 spp.; 23 residents and 4 "loiterers".

1860. WALKER, D. Ornithological Notes of the Voyage of 'The Fox' [final search for Sir J. Franklin] in the Arctic Seas. < *Ibis*, ii, 1860, pp. 165–168.

General narrative. 21 spp. observed at Godhavn.

1860–61. LE MOINE, J. M. Ornithologie | du | Canada. | — | [Quotation from Michelet's L'Oiseau.] | — | Par J. M. Le Moine, Avocat. | — | Première [Seconde] Partie. | — | Québec: | imprimé par E. R. Fréchette, | 21, rue la Montagne. | — | 1860 [1861]. 12mo. Two parts issued in paper, pagination continuous, probably to be bound in one. I, pp. —, 100; II, 1 p. l., pp. vi, 101–398, with 1 l. errata. The wrapper reads: Histoire Naturelle | du | Canada. | — | Les Oiseaux. | — | [etc.] A few woodc. tail-pieces.

A work to which no ornithologist turns for information. Matter miscellaneous—descriptive, effusive, and poetical, with copious quotation. The notable feature is that for the first time since Vieillot, and probably for the first time in any American publication, a large series of N. Am. birds receive French names. Many of these are original, and the author will be chiefly remembered in this connection. English equivalents are added in brackets, and the binomials of Baird and Audubon in footnotes. "Cette lacune" [zoologique dans le champ des lettres du Canada] "nous n'avons certes pas la prétension de l'avoir comblée; tant s'en faut" (extrait de l'avant-propos, partie II, p. i).

1860–63. ALLEN, J. A. Birds of New England. < *New England Farmer* (*weekly*), *for* Aug. 11, 25, Sept. 22, Oct. 6, 20, Nov. 3, 17, Dec. 1, 22, 1860; Jan. 5, 26, March 2, May 18, June 15, July 20, Sept. 21, Oct. 26, Nov. 23, 1861; April 26, July 26, Aug. 16, Sept. 13, Oct. 18, 25, Nov. 8, Dec. 6, 1862. Also, republished in the same newspaper (*monthly*), large 8vo, *for* Sept., Oct., Nov., Dec., 1860, Jan., Feb., March, April, June, July, Aug., Oct., Nov., Dec., 1861, June, July, Sept., Nov., Dec., 1862, and Jan., 1863.

Twenty-five articles in all, taking the birds of New England in order from *Accipitres* to the middle of the *Fringillidæ*. Popular biographical accounts, written to interest farmers in the feathered life of their fields.

1861. ALBRECHT, R. Die Vögel der Bahama-Inseln. Aus dem Englischen mitgetheilt von R. Albrecht. < *J. f. O.*, 1861, ix, pp. 48–60.

Modifizirte Ueberzetzung, herausgegeben nach H. Bryant's Verzeichniss enthalten in *Proc. Bost. Soc.*, vii, 1859, pp. 102–134, *q. v.*

1861. AUDUBON, J. J. The Birds of America. From Drawings made in the United States and their Territories. By John James Audubon. Reissued by J. W. Audubon. New York, Roe Lockwood & Son, Publishers, 1861.

Not handled in preparing this bibliography. Sabin, from whom I copy the title, says:—"This is a selection of one hundred and forty plates, only, from the first edition, reproduced in colored lithographs; much inferior to the former edition. The letter press to this selection forms 4 vols. royal 8vo, . . . Indeed, this reissue is an unfinished publication, and the intelligent collector will only accept it as a cheap substitute for the previous work." I have seen the single gr. folio vol. of plates, to which I suppose reference is here made, and 4 roy. 8vo vols. of text—the latter uniform with Audubon and Bachman's "Quadrupeds" (?). The edition here meant is not to be confounded with the 7 vol. roy. 8vo ed. of same date, *q. v.*

1861. AUDUBON, J. J. The Birds of America, . . . Re-issued by J. W. Audubon. New York, Roe Lockwood & Son, 1861. 7 vols. imper. 8vo. Vol. I, pp. viii, 246; II, pp. viii, 200; III, pp. viii, 234; IV, pp. viii, 322;

1861. AUDUBON, J. J.—Continued.
V, pp. viii, 346; VI, pp. viii, 456; VII, pp. viii, 372. 500 col'd pll. 10 × 7 inches.
Not seen—title and collation from Sabin. This is J. W. Audubon's reissue, to be distinguished from his folio pll. and 4 vol. 8vo text of same date, and also from V. G. Audubon's earlier reissue of 1856. See later reissues of this, 1865 and 1871, in 8 vols.

1861. BAIRD, S. F. Report | upon the | Colorado River of the West, | explored in 1857 and 1858 by | Lieutenant Joseph C. Ives, | Corps of Topographical Engineers, | under the direction of the Office of Explorations and Surveys, | A. A. Humphreys, Captain Topographical Engineers, in charge. | — | By order of the | Secretary of War. | — | Washington: | Government Printing Office. | 1861. 1 vol. 4to. > Zoology. By Professor S. F. Baird. pp. 1–6 (this part dated 1860).
List of Birds collected on the Expedition, pp. 5, 6; 65 spp.; with localities.

1861. BARNARD, V. A Catalogue of the Birds of Chester County, Pennsylvania, with their Times of Arrival in Spring, from observations annually for Ten successive years. < (*Fifteenth*) *Ann. Rep. Smiths. Inst.* (*for* 1860), 1861, pp. 434–438.
191 species.

1861. BELL, R. Catalogue of Birds collected and observed around Lakes Superior and Huron in 1860. <*Canad. Nat. and Geol.*, vi, 1861, pp. 270–275.
From the *Report of the Geological Survey for* 1860. 77 spp., annotated.

1861. BRYANT, H. Remarks on some of the Birds that breed in the Gulf of St. Lawrence. <*Proc. Boston Soc. Nat. Hist.*, viii, 1861, pp. 65–75.
Very full on the habits of a dozen species.—*Cf. Ibis*, 1862, pp. 110, 111.

1861. BRYANT, H. Remarks on some of the Birds that breed in the Gulf of St. Lawrence. <*Canad. Nat. and Geol.*, vi, 1861, pp. 255–267.
Reprinted from *Proc. Bost. Soc.*, viii, 1861, pp. 65–75.

1861. COOPER, J. G. New Californian Animals. < *Proc. Cala. Acad. Nat. Sci.*, ii, 1861, pp. 118–123.
Athene whitneyi, p. 118; *Helminthophaga luciæ*, p. 120, spp. nn.; with 16 spp. new to the State of California.

1861. COUES, E. Notes on the Ornithology of Labrador. <*Proc. Acad. Nat. Sci. Phila.*, xiii, 1861, pp. 215–257.
Extended notes of habits, etc.; critical and descriptive matter under *Aegiothus* and *Tringeæ*. *Aegiothus fuscescens*, p. 222, sp. n. *Cf. Ibis*, 1862, pp. 85, 86.

1861. HOLDER, R. H. Birds of Illinois.—Catalogue. <*Trans. Illinois State Agric. Soc. for* 1859–60, iv, 1861, pp. 605–613.
A nominal list of 247 spp.

1861. HOLMES, E. Zoology of Maine. Birds. <*Sixth Ann. Rep. Sec'y Maine Board of Agric.*, 1861, pp. 113–122.
Nominal list of 193 spp. Addenda (13 spp.) are found in *Second Ann. Rep. Nat. Hist. and Geol. of Maine*, 1862, p. 118.

1861. [KENNICOTT, R.] Catalogue | of the | Trowbridge Collection | of | Natural History | in the museum of | the University of Michigan. | — | Published by | the University of Michigan, | Ann Arbor. | 1861. Pamphl. imp. 8vo. (4to according to printers' marks). pp. iv, 32.

1861. [KENNICOTT, R.]—Continued.

Pages 3–15, list of specimens of N. Am. Birds and their eggs, with locality, donor, etc. Nomenclature according to *Smithsonian Checklist*. Page 24, a few exotic birds catalogued. The specimens were from among duplicates of the Smithsonian collection, presented to the university in part to discharge obligations due to Lieut. W. P. Trowbridge, U. S. A.

[1861.] KRIDER, J. Ornithological | and | Oological List | of | North America. | — | John Krider, | Taxidermist, | North-east corner of Second and Walnut streets, | Philadelphia, U. S. A. [1861.] 4to. pp. 16.

738 spp. Merely a copy, on blue writing-paper, for working purposes, of BAIRD'S *Catalogue* of 1858, *q. v.*

1861. LLAVE, PABLO DE LA. Mémoires d'histoire naturelle du docteur D. Pablo de la Llave, extraits du Registro trimestre publié à Mexico en 1832. < *Rev. et Mag. de Zool.*, xiii, 1861, pp. 241–244.

Traduction française par A. Sallé.—De la recherche des objets d'histoire naturelle dans les régions chaudes du Mexique.

1861. MCILWRAITH, T. Notices of Birds observed near Hamilton, C. W. < *Canad. Journ.*, vi, 1861, pp. 6–18, 129–138.

Excellent running commentary on the habits, etc., of a large number of species. *Cf. Proc.* (*Comm.*) *Essex Inst.*, v, 1866, pp. 79–96.

1861. MILES, M. A Catalogue of the Mammals, Birds, Reptiles and Mollusks, of Michigan. < *First Rep. Geol. Surv. Michigan*, 1861, pp. 219–241.

Birds, pp. 222–232. List of 203 spp., slightly annottaed.

1861. REINHARDT, J. List of the Birds hitherto observed in Greenland. < *Ibis*, iii, 1861, pp. 1–19.

Historical introduction. 118 spp., with various critical and field notes, the several categories of breeders, stragglers, etc., typographically distinguished. This remains one of the chief authorities on the subject.

1861. RICHARDSON, J. The | Polar Regions | by | Sir John Richardson, LL. D. | F. R. S. Lond.; Hon. F. R. S. Edin. etc. etc. | Edinburgh: | Adam and Charles Black. | 1861. 1 vol. 8vo. pp. ix, 1 l., 400. > Chap. XVII. Zoology, pp. 274–284.

Cursory allusions to a few birds.

1861. ROSS, B. R. An account of the Animals useful in an economic point of view to the various Chipewyan Tribes. < *Canad. Nat. and Geol.*, vi, 1861, pp. 433–444.

Of birds, mere mention of a few, chiefly *Anatidæ*, in this connection; but the article contains, p. 441 to end, a list of the birds collected in the Mackenzie River district during 1860–61, 81 in number, with indication of those that winter. Page 433, "Zonotrichia Bairdii (if new species)" (which it is not), no descr.

1861. ROSS, B. R. Mammalia and Birds of Arctic [American] Regions. < *Edinb. New Philos. Journ.*, new ser., xiii, 1861, pp. 161–164.

Containing a nominal list of 94 spp. of birds.

1861. SALLÉ, A. Liste d'Oiseaux à vendre provenant des chasses faites en Amérique. Par M. A. Sallé, 13 Rue Guy de la Brosse, à Paris.

His sale-list of Mexican birds.

1861. WHEATON, J. M. Catalogue of the Birds of Ohio. < *Fifteenth Ann. Rep. Ohio State Board of Agric. for* 1860, 1861, pp. 359–398. Addenda, p. 480.

285 spp., with 17 "probabilities"; the rarer or more interesting species fully annotated. Includes, p. 381, *seq.*, reports of legislative action for protection of birds. Also printed separately, repaged, without the legislative reports.

1861. WOOD, W. [Rapacious] Birds of Connecticut. < *Hartford Times* (newspaper, daily and weekly), Mar. 16, 23, 30, Apr. 13, 20, May 4, 11, 18, 25, June, 1, 8, 15, 22, 29, July 6, 20, 27, Aug. 10, 17, 24, 1861.

The foregoing dates are according to the weekly edition; some of the articles also appeared in the daily edition. Treats of the *Accipitres* only; 26 spp. (including *Haliaetus "washingtoni"* and *Buteo "hyemalis"*).

1861. WÜRDEMAN[N], G. Letter relative to the obtaining of specimens of Flamingoes and other Birds from South Florida. < (*Fifteenth*) *Ann. Rep. Smiths. Inst.* (*for* 1860), 1861, pp. 426–430.

1861–62. BLAKISTON, T. On Birds collected and observed in the Interior of British North America. < *Ibis*, iii, 1861, pp. 314–320; 1862, iv, pp. 3–10.

120 spp., with field-notes on about one-fourth of them (of all the *Raptores*); localities merely of the rest. The same subject is resumed by the writer, at greater length, same journal for 1863, *q. v.*

1862. [ANON.] Catalogue of the Birds of Maine. < *Proc. Portland Soc. Nat. Hist.*, i, pt. i, 1862, pp. 66–71.

Names only of about 230 spp. Prefatory note states that the list is based upon a catalogue in the *Preliminary Report of the Scientific Survey of the State*, and information furnished by E. A. Samuels.

1862. BOARDMAN, G. A. Catalogue of the Birds found in the vicinity of Calais, Maine, and about the Islands at the mouth of the Bay of Fundy. < *Proc. Boston Soc. Nat. Hist.*, ix, 1862, pp. 122–132.

Edited by A. E. Verrill. 227 spp., annotated; 4 others added by the editor.

1862. COUES, E. Synopsis of the North American Forms of the Colymbidæ and Podicipidæ. < *Proc. Acad. Nat. Sci. Phila.*, April, 1862, pp. 226–233.

Article descriptive, synonymatic, and critical. *Colymbidæ*, 5 spp.; *Podicipidæ*, 4 genn., 9 spp.; *Æchmophorus*, g. n., p. 229.

1862. COUES, E. Supplementary note to a "Synopsis of the North American Forms of the Colymbidæ and Podicepidæ [*sic*]". < *Proc. Acad. Nat. Sci. Phila.*, Sept., 1862, p. 404.

On the breeding plumage of *Æchmophorus clarkii*.

1862. COUES, E., *and* PRENTISS, D. W. List of Birds ascertained to inhabit the District of Columbia, with the times of Arrival and Departure of such as are non-residents, and Brief Notices of Habits, etc. < (*Sixteenth*) *Ann. Rep. Smiths. Inst.* (*for* 1861), 1862, pp. 399–421.

226 spp.: residents, 44; winter visitants, 44; summer do., 59; migrants in spring and fall, 54; stragglers, 25. *Cf. Ibis*, 1864, p. 125.

1862. EDITORIAL. [Notice of R. Kennicott's operations in the Yukon Region.] < *Ibis*, iv, 1862, pp. 307, 308.

1862. GRUBER, F. Die Farallones-Inseln und deren Naturprodukte. < *California Chronik*, 13. Juli 1862, 20. Juli 1862, 27. Juli 1862.

Enthalten ornithologische Notizen.

1862. HADFIELD, H. Observations and Remarks on Scolopax gallinago and Corvus corone of Wilson. < *Zoologist*, xx, 1862, pp. 8284–8287.

Differences from their respective European allies.

1862. HALL, ARCHIBALD. On the Mammals and Birds of the District of Montreal. < *Canad. Nat. and Geol.*, vii, 1862, pp. 44–78, 171–193, 289–316, 344–376, 401–430.

The first article, in vol. VI, relates only to the mammals. The whole of the series quoted relates to the birds; it is elaborate and painstaking, and by far

1862. HALL, ARCHIBALD.—Continued.

the most important Canadian contribution to ornithology extant; notwithstanding, it is seldom referred to. The matter is descriptive, biographical, and briefly synonymatic. A table, pp. 44–49, gives the number and color of the eggs of the breeders. 199 spp. are treated. An editorial preface states that the MS. of 153 pages was prepared in 1839 for the Natural History Society of Montreal, receiving a silver medal; that it was subsequently intrusted to Mr. Cassin, to be used in the preparation of a work of his, and only returned by him a short time before its publication. *Falco dawsonis*, n. sp., p. 68. *Strix dalhousii* Hall, p. 77, was first published in Macgillivray's ed. of Cuvier, Edinburgh, 1839.

1862. HAYDEN, F. V. On the Geology and Natural History of the Upper Missouri. < *Trans. Amer. Philos. Soc.*, (2), xii, 1863, pp. 1–218.

"Read July 19, 1861"; and, though contained in the vol. for 1863, was published in 1862, as appears from the retitled separate issue (4to, Philadelphia, C. Sherman & Son, 1862; 2 p. ll., pagination otherwise the same as in the original). Contains, pp. 151–176, a fully annotated list of the birds of the region, from original observations, the identification of the species resting upon Baird's examination of the collection at the Smithsonian.

1862. HOLDER, R. H. Birds of Illinois.—Catalogue. < *Trans. Illinois Nat. Hist. Soc.*, 2d ed., 1862, pp. 77–85.

Merely a nominal list of 248 spp.

1862. HOLMES, E. Birds of Maine—(Addenda.) < *Second Ann. Rep. Nat. Hist. and Geol. of Maine*, 1862, p. 118.

Adds 13 spp. to former catalogue. See 1861, HOLMES, E.

1862. REIN, J. G. [Briefliche Nachricht aus den Bermuda-Inseln.] < *Zool. Gart.*, iii, 1862, p. 143.

Erwähnt einige Vogelarten.

1862. ROSS, B. R. List of Mammals, Birds, and Eggs, observed in the McKenzie's River District, with Notices. < *Canad. Nat. and Geol.*, vii, 1862, pp. 137–155.

Of birds, p. 142 to end, 192 spp., briefly annotated; winter residents marked with an asterisk (*), those of which eggs were procured with an obelisk (†).

1862. ROSS, B. R. On the Mammals, Birds, etc., of the Mackenzie River District. < *Nat. Hist. Rev.*, 2d ser., ii, 162, pp. 269–290.

Birds, pp. 276–290; annotated list of 192 spp.

1862. SCLATER, P. L. On some Birds to be added to the Avi-fauna of Mexico. < *P. Z. S.*, xxx, 1862, pp. 368; 369, pl. xlvi.

8 spp. *Vireo hypochryseus*, p. 369, pl. xlvi, sp. n.

1862. S[TIMPSON], W. On the Ornithology of Labrador; by Elliott Coues. < *Am. Journ. Sci.*, xxxiii, 1862, p. 298.

A short notice of the paper, by "W. S."

1862. TAYLOR, G. C. Five Weeks in the Peninsula of Florida during the Spring of 1861, with Notes on the Birds observed there. < *Ibis*, 1862, iv, pp. 127–142, 197–207.

Narrative of observations: partial list of 61 spp.

1862. VERRILL, A. E. Notes on the Natural History of Anticosti. < *Proc. Boston Soc. Nat. Hist.*, ix, 1862, pp. 132–143.

Includes a catalogue, fully annotated, of the birds observed, 61 spp., p. 137 to end. *Cf. Ibis*, 1863, p. 473.

1862. VERRILL, A. E. Catalogue of the Birds found at Norway, Oxford Co., Maine. < *Proc. Essex Inst.*, iii, 1862, pp. 136–160.

Annotated list of 159 spp., followed, pp. 156–160, by a similar list of 107 Maine birds not observed at Norway; 266 spp.

1863. AUDUBON, J. J. The Birds of North America: a popular and scientific description of the Birds of the United States and their Territories. New edition. New York, 1863.

Not seen.—I know nothing of this ed., which I should suppose to be merely a reissue of the ed. of 1856 or 1861, *qq. vv.*

1863. BAIRD, S. F. [Notice of R. Kennicott's and J. Xantus's movements in North America.] < *Ibis*, v, 1863, pp. 238, 239.

1863. BAIRD, S. F. [Letter on J. Xantus's collections at Colima, Mexico.] < *Ibis*, v, 1863, p. 476.

1863. BLAKISTON, T. On the Birds of the Interior of British America. < *Ibis*, v, 1863, pp. 39–87, 121–155.

A nearly complete list of Birds of British America east of the Rocky Mountains, bringing the subject fairly up to date; with more or less elaborate field-notes and biographical and geographical items, chiefly from personal observations, but also reducing and including material from the *Fn. Bor.-Am.*, MURRAY (*Edinburgh N. Phil. Journ.*, April, 1859), ROSS (*Nat. Hist. Rev.*, July, 1862), and other sources. The original matter has been found more reliable than that from either of the last-mentioned sources. *Neocorys spraguei* is the focus of this important contribution. *Cf.* also the author's List of species collected in the same region, *Ibis*, Dec. 1861, Jan. 1862.

1863. LICHTENSTEIN, H. Lichtenstein's Preis-Verzeichniss mexicanischer Vögel etc. vom Jahre 1830. < *J. f. O.*, xi, 1863, pp. 54–60.

"Auf mehrfachen Wunsch geben wir hier den Abdruck einer seltenen Druckschritt, welche für die Priorität mancher mexikanischen Vogelart von Wichtigkeit ist. Das Lichtensteinsche Verzeichniss ist auf 3 Quartseiten enthalten, deren jede in 2 Spalten getheilt ist. Der Druck ist dem Originale annähernd ähnlich wiedergegeben. Eine Kritik der neuen Arten, nach den Typen des Berliner Museums, wird in einem späteren Hefte dieses Journals geliefert werden. D. Herausg." 153 Vogelarten.—*Psittacus strenuus, Ramphastos poecilorynchus, Trogon glocitans, Cuculus viaticus, Picus melampagon, P. aurifrons, P. oleagineus, P. poliocephalus, Trochilus beryllinus, T. verticalis, T. cuculliger, T. curvipennis, T. hemileucurus, T. coruscus, Sturnus holosericeus, Icterus gularis, Icterus dives, Corvus morio, C. azureus, Fringilla epopoea, F. rhodocampter, F. superciliaris, F. pusio, F. haemorrhoa, F. melanoxantha, Alauda glacialis, Euphone tibicen, Tanagra ignicapilla, T. gnatho, T. grandis, T. auricollis, T. erythromelas, T. abbas, T. rutila, T. celaeno, Sylvia flavicollis, S. petasodes, S. culicivora, Troglodytes murarius, T. mexicanus, T. latifasciatus, Turdus erythrophthalmus, T. deflexus, T. helvolus, Muscicapa obsoleta, M. larvata, M. mesaleuca, M. atrata, Hirundo prasina, H. coronata, Falco anthracinus, Tringa deppii.* Alle diese Vögel sind Lichtensteinsche Arten, ob neu oder nicht.

1863. MICHENER, E. Agricultural Ornithology. < *Rep. Com'r of Agric. for* 1863, 1863, pp. 287–307.

Substantially an annotated list of the Land Birds of Chester Co., Pa.

1863. SAMUELS, E. Mammalogy and Ornithology of New England, with reference to Agricultural Economy. < *Rep. of Com'r of Agric. for* 1863, 1863, pp. 265–286.

A general sketch of the subject.

1863. VERRILL, A. E. Additions to the Catalogue of the Birds found in the Vicinity of Calais, Me., and about the Bay of Fundy. < *Proc. Boston Soc. Nat. Hist.*, ix, 1863, pp. 233, 234.

Twelve species.

1863. WALKER, D. Natural-History Notes made during a passage from Liverpool to Vancouver Island (Dec. 1862 to June, 1863). < *P. Z. S.*, xxxi, 1863, pp. 378–380.

Cursory allusions to various birds.

1864. ALLEN, J. A. Catalogue of the Birds found at Springfield, Mass., with Notes on their Migrations, Habits, &c.; together with a List of those Birds found in the State not yet observed at Springfield. < *Proc. Essex Inst.*, iv, art. iv, 1864, pp. 48–98.

195 spp. at Springfield; 296 in Massachusetts, of which 131 breed, 28 are resident, 67 winter visitors, 75 migrants, 106 summer visitors, 35 stragglers.

1864. BRYANT, H. Description of two Birds from the Bahama Islands, hitherto undescribed. < *Proc. Boston Soc. Nat. Hist.*, ix, 1864, pp. 279, 280.

Pitangus bahamensis, p. 279; *Saurothera bahamensis*, p. 280.

1864. HITCHCOCK, C. H. A Catalogue of the Birds of Maine. < *Proc. Portland Soc. Nat. Hist.*, i, pt. i, 1864, pp. 66 – —.

Not seen.

1864. HOUGH, F. B. Results | of | Meteorological Observations, | made under the direction of the | United States Patent Office and the Smithsonian Institution, | from the | year 1854 to 1859, inclusive, | being a report of the | Commissioner of Patents | made at the first session of the thirty-sixth Congress. | — | Vol. II.—Part I. | — | Washington. | Government Printing Office. | 1864. 4to. > Observations upon the Periodical Phenomena in Plants and Animals, from 1851 to 1859, with tables of the dates of opening and closing of lakes, rivers, harbours, etc. Arranged by Franklin B. Hough, M. D. pp. 1–232.

Includes, pp. 183–206, dates of appearance of 19 spp. of N. Amer. birds during the period stated, from observations made at numerous points in the United States; being the most extended and elaborate set of statistics of this particular kind ever made in this country.

1864. LORD, J. K. List of Birds collected and presented by the British North American Boundary Commission to the Royal Artillery Institution. < *Proc. Roy. Art'y. Inst.*, 1864, pp. 110–126.

87 spp., shortly annotated, with localities of the specimens. "The paper is of some value in determining the geographical distribution of birds in North-western North America."—*Zool. Rec. for* 1864, p. 55.

1864. SAMUELS, E. A. Ornithology of Massachusetts—List of species. < *Eleventh Ann. Rep. Sec'y Mass. Board of Agric. for* 1863, 1864, App., pp. xviii–xxix.

267 spp., annotated. Reprinted, repaged, retitled, and issued separately, as follows:—

A | Descriptive Catalogue | of the | Birds of Massachusetts. | — | By E. A. Samuels. | — | Boston: | Wright & Potter, Printers, 4 Spring Lane. | 1864. 8vo. pamphl. pp. 14 + 1.

No descriptive matter. Many of the species here given do not reappear in his later work. The additional page gives brief directions for collecting.

1864. SCLATER, P. L. List of a Collection of Birds procured by Mr. George H. White in the vicinity of the City of Mexico. < *P. Z. S.*, xxxii, 1864, pp. 172–179.

156 spp., with little annotation; several new to Mexico; no spp. nn.

1864–65. MÜLLER, J. W. VON. Reisen in den Vereinigten Staaten, Canada und Mexico von Baron J. W. von Müller. Leipzig: 1864–5. 3 vols. roy. 8vo.

Das Werk selbst war mir nicht zugänglich. Titel und Commentar sind dem *Zool. Rec.* entnommen. Enthält systematisches Verzeichniss der Vögel Mexico's, Bd. III., SS. 551–594; 611 Arten. *Trogon erythronotus*, *Tachyphonus schlagintweiti*, *Melospiza pectoralis*, *Aimophila tolteca*, spp. nn. Bd. III. erschien besonders unter dem Titel: „Beiträge zur Geschichte, Statistik und Zoologie von Mexico."

[1864–66.] BAIRD, S. F. Smithsonian Miscellaneous Collections. | —181— | Review | of | American Birds, in the Museum of the | Smithsonian Institution. | By | S. F. Baird. | — | Part I. North and Middle America. | — | [Medallion.] | Washington: | Smithsonian Institution. | [No date on title: June, 1864, to p. 33; July, 1864, to p. 81; Aug., 1864, to p. 129; Sept., 1864, to p. 149; Oct., 1864, to p. 161; Nov., 1864, to p. 177; Apr., 1865, to p. 241; May, 1865, to p. 321; May, 1866, to p. 417; June, 1866, to end.] 1 vol. 8vo, originally issued in sheets as successively printed, at above dates. pp. iv, 450.

This work, which was discontinued before the completion of the 1st part, consists of critical notices, synonymatic, descriptive, geographical, of the North and Middle (and some South) American species, contained in the Smithsonian Museum (and some others), of the families *Turdidæ*, *Cinclidæ*, *Saxicolidæ*, *Sylviidæ*, *Chamæidæ*, *Paridæ* (incl. *Sittæ*), *Certhiidæ*, *Troglodytidæ*, *Motacillidæ*, *Sylvicolidæ*, *Hirundinidæ* (1864–65), *Vireonidæ*, *Ampelidæ*, and *Laniidæ* (1866, the last three not being included in the table of contents, p. iv). It may be regarded as complementary to the same author's well known work of 1858 (with J. Cassin and G. N. Lawrence), and as having been suspended in anticipation of his later work (1874, with T. M. Brewer and R. Ridgway), which latter amplifies its plan and scope. Many new species or varieties and some new genera are described, as follows:—*Turdus auduboni*, p. 16; *T. confinis*, p. 29; *Platycichla* (n. g.) *brevipes* pp. 32, 436; *Mimocichla schistacea*, p. 37; *Polioptila nigriceps*, p. 69; *Auriparus*, n. g., p. 85 (type *Aegithalus flaviceps* Sund.); *Thryophilus rufalbus* var. *poliopleura*, p. 128; *T. sinaloa*, p. 130; *T. schottii*, p. 133; *Troglodytes ædon* var. *aztecus*, p. 139; *T. inquietus* (Lawr. MSS. = *hypædon* Lawr. 1861, *nec* Scl.); *T. hyemalis* var. *pacificus*, p. 145; *Cistothorus palustris* var. *paludicola*, p. 148; *Notiocorys* et *Pediocorys*, nn. gg., p. 151 (*Anthus rufus* and *A. bogotensis* respectively); *Parula inornata*, p. 171 (*brasiliana* S. & S., *nec* Licht.); *Perissoglossa*, n. g. (type *Mot. tigrina* Gm.), p. 180; *Dendroica gundlachi*, p. 197 (*æstiva* auct., ex Cuba); *D. rufigula*, p. 204; *D. graciæ* (Coues MSS.), p. 210; *D. adelaidæ*, p. 212; *Geothlypis melanops*, p. 222; *G. poliocephala*, p. 225; *Granatellus francescæ*, p. 232; *Idiotes*, n. g., p. 237 (type *Setophaga rufifrons* Sw.); *Myioborus*, n. g., p. 237 (type *Set. verticalis* Sw.); *Basileuterus melanogenys*, p. 248; *Setophaga aurantiaca* and *S. torquata*, p. 261; *Progne elegans*, p. 275; *P. cryptoleuca*, p. 277; *P. furcata*, p. 278; *P. leucogaster*; *Phæoprogne*, n. g. (*Hirundo fusca* V.), p. 283; *Callichelidon*, Bryant MSS., n. g. (*C. cyaneoviridis*), p. 303; *Notiochelidon*, n. g. (type *Atticora pileata* Gould), p. 306; *Pygochelidon*, n. g. (type *Hirundo cyanoleuca* V.), p. 308; *Atticora cyanoleuca* var. *montana*, p. 310; *Stelgidopteryx fulvigula*, p. 318; *Vireonella*, n. g., p. 326 (*gundlachi*, etc.); *Vireosylvia propinqua*, p. 348; *Vireo carmioli*, p. 356; *Vireo latimeri*, p. 364; *Vireolanius eximius*, p. 398; *Myiadestes solitarius*, p. 421. Most of the new generic names are proposed as merely subgenera; many of the new species are not, in point of fact, new, but are new names required through rectifications of synonymy, or are proposed as varietal designations. The analysis of linked forms is carried to an extreme. The last fascicle (1866) is illustrated with numerous woodcut outlines of head, feet, wings, and tail; these figures are not numbered *seriatim*, but bear the Smithsonian numbers of the specimens whence they are taken. *Cf. Am. Journ. Sci.*, xxxviii, 303, 431; xxxix, 115; xl, 142; xlii, 134.

[1864–66.] BAIRD, S. F.—Continued.

There is another ed. of this, as finally issued altogether, with the title slightly modified, dated 1864–72; it is identical in pp. 1–450 with original issue in sheets, but is preceded by redated pp. i–vi, and followed by additional pp. 451–478, these being a "List of Species described", and "Alphabetical Index of Species".

1864–75. REINHARDT, J. [On Greenland Birds.] < *Vidensk. Meddel.*, 1864, 246; 1865, 241; 1872, 131; 1875, 127.

Not seen?—The above looks like one of my memoranda for private purposes, which, however, I am unable to verify at present printing.

1865. AMBROSE, J. Observations on the Sea-birds frequenting the coast of St. Margaret's Bay, N. S. < *Trans. Nova Scotia Inst. Nat. Sci.*, i, pt. iii, 1865, pp. 51–59.

Vernacular names of 29 spp., with their scientific equivalents in most cases, followed by a general sketch of the subject.

1865. AUDUBON, J. J. The Birds of America, . . . 8 vols. 8vo.

Merely a later edition of J. W. Audubon's reissue, but with the pagination changed, and the vols. made 8 instead of 7.

1865. CASSIN, J. [Letter relative to the engraved copper-plates of Vieillot's 'Ois. Am.-Sept.' and Audebert and Vieillot's 'Ois. Dorés', proposed to be sold by the Philadelphia Academy for what they would fetch as old copper.] < *Ibis*, 2d ser., i, 1865, p. 116.

Sic transit, etc.

1865. CLIFFORD, E. A. Birds [of Illinois] Injurious and Beneficial to the Horticulturist. < *Trans. Illinois State Agric. Soc. for* 1861–64, v, 1865, pp. 925–927.

Seven species.

1865. COUES, E. Ornithology of a Prairie-Journey, and Notes on the Birds of Arizona. < *Ibis*, 1865, 2d ser., i, pp. 157–165.

Sketch of route; running commentary on numerous spp. *Cf. Zo l. Rec. for* 1865, pp. 79, 80.

1865. COUES, E. [Notes on various birds observed at Fort Whipple, Arizona.] < *Ibis*, 2d ser., i, 1865, pp. 535–538.

A letter to the editor giving a general commentary on the bird-fauna of this locality.

1865. DODGE, J. R. Birds and Bird Laws. < *Rep. U. S. Agric. Dept. for* 1864, 1865, pp. 431–446.

Treating N. A. Birds in general from an economic and legislative standpoint.

1865. DUVAN, J. H. Some additions to the Game of Nova Scotia. < *Trans. Nova Scotia Inst. Nat. Sci.*, i, pt. iii, 1865, pp. 59–69.

Suggestions for the naturalization of certain exotic *Gallinæ*, etc.

1865. ELLIOT, D. G. The "Game Birds" of the United States. < *Report U. S. Agric. Dept. for* 1864, 1865, pp. 356–385, pll. (woodcc.) xlii-xlvi.

Gallinæ; *Columbæ*; some *Limicolæ*; (no *Anatidæ*!).

1865. FEILNER, J. Exploration in Upper California in 1860, under the Auspices of the Smithsonian Institution. < (*Nineteenth*) *Ann. Rep. Smiths. Inst.* (*for* 1864), 1865, pp. 421–430.

Narrative, including extended notes on the habits of about a score of birds, pp. 425–429.

1865. Hamlin, C. E. Catalogue of Birds found in the vicinity of Waterville, Kennebec County [Maine]. < *Tenth Ann. Rep. Sec'y Maine Board of Agric.*, 1865, chap. v, pp. 168–173.

Nominal list of 135 spp., with brief introductory remarks.

1865. Hoy, P. R. Journal of an Exploration of Western Missouri in 1854, under the Auspices of the Smithsonian Institution. < (*Nineteenth*) *Ann. Rep. Smiths. Inst.* (*for* 1864), 1865, pp. 431–438.

The narrative relates largely to birds, and concludes with a nominal list of 153 spp.

1865. Lord, J. K. Catalogue of Birds' Nests and Eggs collected in North-West America. < *Proc. R. A. Inst. Woolwich*, 1865, pp. 337–339.

The nidificatory habits of 18 spp. are briefly described (*cf. Ibis*, 1866, p. 208).

1865. Macfie, M. Vancouver Island and | British Columbia. | Their History, Resources, and Prospects. | By | Matthew Macfie, F. R. G. S. | Five years resident in Victoria, V. I. | London: | Longman, Green, Longman, Roberts, & Green. | 1865. 1 vol. 8vo. pp. xii + 1 l., 574, maps, pll., and woodcc.

Chap. XII, p. 297, On the Animal and Vegetable Productions, contains, pp. 301–303, a cursory notice of various birds.

1865. Müller, J. W. Systematisches Verzeichniss der in Mexico beobachteten und gesammelten Vögel. 8vo. pp. 26.

"It appears from Dr. Hartlaub's 'Bericht' for 1864 that this list, which is said to be the fullest yet published of the birds of Mexico, is from the third volume of the author's 'Reisen in Mexico und den Vereinigten Staaten'. The separately-printed copy we have seen bears no author's or printer's name or date or place of publication: 621 spp. are enumerated, and a few synonyms added." (Not seen—title and comment from *Zool. Rec. for* 1865, p. 80.)

It appears from *Zool. Rec. for* 1866, p. 62, that this copy was only a proof; "for several alterations appear to have been made in the list" as finally published in "Reisen in den Vereinigten Staaten" etc., vol. III, pp. 551–594.

1865. Newton, A. [Notice of movements of E. Coues.] < *Ibis*, 2d ser., i, 1865, pp. 117, 118.

1865. Newton, A. [Notice of R. Kennicott's Alaskan projet.] < *Ibis*, 2d ser., i, 1865, pp. 239, 240.

1865. Sagard Theodat, G. Le Grand Voyage | du | Pays des Hurons | Situé en l'Amérique vers la Mer | douce, ès derniers confins | de la | Nouvelle France | dite Canada | avec un Dictionnaire de la langue Huronne | par F. Gabriel Sagard Theodot | Recollet de S. François, de la province de S. Denys en France | — | Nouvelle édition | publiée par M. Émile Chevalier | — | Paris | Librairie Tross | 5, rue Neuve-des-petits Champs | — | 1865 1 vol. sm. 8vo. 4 prel. ll. (new titles, etc.), pp. i–xxvi (orig. titles, etc.), 1–268, and 1–12 + 74 ll. (Huron dictionary, etc.).

This reprint is stated to be "une copie complète, exacte, matériellement aussi fidèle que possible"; it gives fac-similes of the original titles, and indicates throughout the pagination of the original, which is now extremely rare. In this edition, the bird-matter is at pp. 209–214 (= pp. 296–304 of the original).

1865. Samuels, E. A. Oology of some of the Land Birds of New England, as a means of identifying injurious or beneficial species. < *Rep. U. S. Agric. Dept. for* 1864, 1865, pp. 386–430.

Treats of a large number of species, on what principle of selection does not appear.

1865. SCLATER, P. L. [Exhibition of a collection of Birds' skins formed by M. Adolph Boucard in the vicinity of Vera Cruz, Mexico.] < *P. Z. S.*, xxxiii, 1865, p. 397.

1865. WHITELY, H. Catalogue of North American Birds and Eggs, arranged in cabinets in the museum of the Royal Artillery Institution, Woolwich. Woolwich: 1865. Roy. 8vo. pp. 23.

Not seen—title from *Zool. Rec. for* 1865, p. 80, where A. Newton suggests the character of the publication by stating that he notices it chiefly for the purpose of drawing attention to the flourishing museum at Woolwich.

1865–66. DOWNS, A. On the Land Birds of Nova Scotia. < *Trans. Nova Scotian Inst. Nat. Sci.*, i, pt. iii, 1865, pp. 38–51; pt. iv, 1866, pp. 130–136.

Field-notes on 91 spp. "*Cinclus americanus*", in this list, means *Siurus nævius*.

1865–66. DRESSER, H. E. Notes on the Birds of Southern Texas [and Mexican vicinity]. < *Ibis*, 1865, 2d ser., i, pp. 312–330, 466–495; 1866, 2d ser., ii, pp. 23–46.

Narrative introduction. More or less extended field-notes, from original observations, on 272 species, being apparently most of those occurring there. Interspersed with notes of A. L. Heermann. Remains to date one of the chief authorities for this locality.

1866. BAIRD, S. F. The Distribution and Migrations of North American Birds. < *Am. Journ. Sci.*, xli, 1866, pp. 78–90, 184–192, 337–347.

Abstract of a memoir presented to the National Academy of Sciences, Jan., 1865. Reprinted, *Ibis*, 1867, pp. 257–293; translated, *J. f. O.*, 1866, pp. 244–269, 338–352; Extracts, *Ann. Mag. N. H.*, xviii, 1866, pp. 141–144. *Cf.* especially *Zool. Rec. for* 1866, pp. 59, 60.

A very notable paper, in which the whole subject is elaborated with care upon the data furnished by the enormous Smithsonian collections. There are many comparative lists of species, in evidence of the facts of distribution presented. To the six Sclaterian "Regions" the author adds a seventh, the West Indian. North America is divided primarily into two great Zoological "Provinces", the "Eastern" and the "Western"; the latter subdivided to afford a third, the "Middle". The dividing line of the two major divisions coincides approximately with long. 100 W. G. in the United States, but in higher latitudes trends rapidly westward, gaining the Pacific in Northern Alaska. The Middle Province extends to the Pacific Slope, which latter constitutes the Western Province proper. The ornithological data accord with those derived from other branches of zoology; and subsequent investigation has only confirmed the main features of the present mapping, whatever the modification in detail required. The migrations of the birds are treated in the same thorough manner, the interchange of species between Europe and America being perhaps the most interesting aspect of this portion of the subject. Variation under climatic influences is also discussed in its technical bearings on the questions of nomenclature; the facts of decrease in size with latitude and of lessened intensity of coloration with aridity are also set forth.

1866. BAIRD, S. F. Prof. Spencer F. Baird. Die Verbreitung und Wanderungen der Vögel Nord-Amerika's. < *J. f. O.*, xiv, 1866, pp. 244–269, 338–352.

Aus dem *American Journal of Science and Arts*, vol. xli, 1866, übersetzt.

1866. BREWER, T. M. The Food of Birds. < *Harper's New Monthly Mag.*, xxxiii, 1866, pp. 241–244.

1866. COUES, E. From Arizona to the Pacific. < *Ibis*, 1866, 2d ser., ii, pp. 259–275.

1866. COUES, E.—Continued.

Ornithological narrative of a journey from Fort Whipple, Arizona, to San Pedro, California, with special reference to the birds of the last-named locality. *Cf. Zool. Rec. for* 1866, pp. 60, 61.

1866. COUES, E. List of the Birds of Fort Whipple, Arizona: with which are incorporated all other species ascertained to inhabit the Territory; with brief critical and field notes, descriptions of new species, etc. < *Proc. Acad. Nat. Sci. Phila.*, xviii, 1866, pp. 39–100.

245 spp., with critical and field notes, introduced with sketch of the locality. *Micrathene*, p. 51; *Asyndesmus*, p. 55; *Podasocys*, p. 96, genn. nn.; *Mitrephorus pallescens*, p. 63; *Vireo plumbeus*, p. 74; *V. vicinior*, p. 75; *V. pusillus*, p. 76, spp. nn.; *Chrysomitris mexicanus* var. *arizonæ*, p. 82, var. n. *Certhiola "flaveola"* is a mistake. This paper was the first connected account of the birds of the region. It was reissued separately, *v. l. p.*, but repaged and under different title. *Cf. Ibis*, 1867, pp. 130, 131, and 247; *Zool. Rec. for* 1866, p. 61.

1866. COUES, E. [Reprinted from the Proceedings of the Philadelphia Academy of Natural Sciences, January 1866.] | — | Prodrome of a Work | on the | Ornithology | of | Arizona Territory. | By Elliott Coues, M. A., M. D. | (Ass't Surgeon U. S. Army.) | — | Philadelphia: | Merrihew & Son, Printers. | 1866. 8vo. pp. 64.

Fifty copies repaged under this cover-title; no other change.

It is proper to remark, that the promise implied in the title of this little treatise is fulfilled at length in the work to the first volume of which this present Bibliography forms the Appendix. A thousand or more folios of MS., as originally prepared, were destroyed by accident at Fort Macon, N. C., in 1869.

186–? HINCKS, W. "Catalogue of Birds known to Inhabit Western Canada, systematically arranged according to the method adopted in the Museum of the University of Toronto." ————?

Not seen.—*Cf. Canad. Journ.*, xi, 1866, pp. 245–247.

1866. HINCKS, W. Notes of a few new and interesting Canadian Birds, exhibited by George McKay, Esq., Mr. Passmore taxidermist, and from the Museum of the University. < *Canad. Journ.*, xi, 1866, p. 72.

Centrocercus phasianellus; Anser hutchinsii. Cygnus passmori, sp. n.

1866. HINCKS, W. List of Birds observed near Hamilton, C. W., by Thomas McIlwraith. Extracted from the Proceedings of the Essex Institute, Vol. V. 1866. < *Canad. Journ.*, xi, 1866, pp. 245–247.

Review—with addition of several species.

1866. KING, W. R. The Sportsman and Naturalist in Canada. By Major W. Ross King, &c. &c. Illustrated with Coloured Plates and Woodcuts. London: 1866. Roy. 8vo. pp. 334.

Not seen.—"Contains an account of some of the birds of Canada, drawn up with more regard to scientific accuracy than is usual among sporting writers." *Cf. Ibis*, 1867, pp. 125, 126; *Zool. Rec. for* 1866, p. 62.

1866. LAWRENCE, G. N. Catalogue of Birds observed on New York, Long, and Staten Islands, and the adjacent parts of New Jersey. < *Ann. Lyc. Nat. Hist. New York*, viii, 1866, pp. 279–300.

327 spp., many of which are annotated; but otherwise the list makes no distinction of the several categories of residents, migrants, etc., under which the species come. This is doubtless the first list of N. A. birds to include *Passer domesticus*.

1866. LE MOINE, J. M. The Birds of Canada. < *The Saturday Reader*, ii, June 16, 1866, pp. 229–231.

Substance of an address before Lit. and Hist. Soc. of Quebec, 25th April, 1866—being a general survey of Canadian ornithology.

1866. LORD, J. K. The Naturalist in Vancouver Island and British Columbia. By John Keast Lord, F. L. S., Naturalist to the British North American Boundary Commission. London: 1866. 2 vols. sm. 8vo. woodcc. Vol. I, pp. 358; II, 375. >Vol. II. Appendix, pp. 291–301.

Not seen.—"Contains a good deal that is interesting respecting the habits of many of the birds . . . . Mr. Lord has small reason to be grateful to his printer or woodcutter." List of 226 spp. of birds at the place noted. *Cf. Ibis*, 1867, p. 126; 1868, p. 116; *Zool. Rec. for* 1866, p. 62.

1866. MCILWRAITH, T. List of Birds observed near Hamilton, Canada West. < *Proc.* (*Comm.*) *Essex Inst.*, v, 1866, art. v, pp. 79–96.

Results of 10 years' observations; annotated list of 241 spp.

1866. MURRAY, A. "Contributions to the Natural History of the Hudson's Bay Company's Territories.—Birds. III. Edinburgh, 1866."

Not seen.—Compare 1859, MURRAY, A.

1866. ROOSEVELT, ROBERT B. The | Game-Birds | of the | Coasts and Lakes of the Northern States | of America. | A full account of the sporting along our sea- | shores and inland waters, with a com- | parison of the merits of breech- | loaders and muzzle- | loaders. | By Robert B. Roosevelt, | Author of "The Game-Fish of North America," "Superior Fishing," | "Country Life," etc., etc. | [Trade-mark.] | New York: | Carleton, Publisher, 413 Broadway. | M DCCC LXVI. 1 vol. 12mo. pp. i–vi, 7–336, woodc. on p. 139.

1866. SAGARD THEODAT, G. Histoire | du Canada | et Voyages | que les frères Mineurs recollects y ont faicts | pour la conversion des infidèles | depuis l'an 1615 | par Gabriel Sagard Theodat | avec un dictionnaire de la langue Huronne | Nouvelle édition | publiée par M. Edwin Tross. | — | Premier [—Quatrième] Volume. | — | Paris | Libraire Tross | 5, rue neuve-des-petits-champs, 5. | 1866 4 vols. sm. 8vo. > Vol. III.

A textual reprint of the original of 1636, indicating pagination and typography of title of the original. In this ed., the bird-matter is at pp. 666–674 (vol. III).

1866. VERRILL, A. E. Note on the Distribution of North American Birds. < *Am. Journ. Sci.*, xli, 1866, pp. 249, 250.

On the limits of the Canadian and Alleghanian faunæ of the Eastern Province.

1866. VERRILL, A. E. [On the Geographical Distribution of North American Birds, with reference to the physical causes that determine their limits in latitude.] < *Proc. Boston Soc. Nat. Hist.*, x, 1866, pp. 259–262.

1866. WEIZ, S. List of Vertebrates observed at Okak, Labrador, by Rev. Samuel Weiz, with Annotations by A. S. Packard, Jr., M. D. < *Proc. Boston Soc. Nat. Hist.*, x, 1866, pp. 264–277.

89 spp. of birds, pp. 267–269, scarcely annotated; chiefly valuable for the Esquimaux names given.

1866–69. ELLIOT, D. G. The | New and heretofore Unfigured Species of | the Birds | of | North America. | By | Daniel Giraud Elliot, [etc.] | Vol. I [II]. | New York: | published by the author. | [1866 to] 1869. 2 vols. imp. folio. Not paged! pll. not numbered!! cuts pasted in text.

Cover-title of the parts simply "*The Birds of North America*", etc.

1866–69. ELLIOT, D. G.—Continued.

This work, taking a foremost place among the great illustrated books of N. A. birds, was issued originally in fifteen parts, 1866–69, mostly of five plates each, to be bound in two imp. folio vols., and furnished with 18 additional unpaged leaves, being title-pages, Dedication to Wilson, List of subscribers, Preface, Introduction, Explanations, etc., List of plates and species. Parts i, ii, 1866; iii–viii, 1867; ix–xii, 1868; xiii–xv, 1869. *Cf. Ibis*, 1866, p. 417; 1867, p. 376; 1868, p. 345; 1870, p. 277; *Zool. Rec. for* 1866, p. 61; 1867, p. 67; 1868, p. 54; 1869, p. 47.

The introduction treats of 114 spp., forming a critical commentary on most of them, and contains 18 woodcuts. According to this, the species figured are as follows:—

Vol. I, plate 1, *Harporhynchus cinereus;* 2, *Parus montanus;* 3, *Lophophanes inornatus;* 4, *Campylorhynchus affinis;* 5, *Helminthophaga luciæ;* 6, *Dendrœca graciæ;* 7, *Vireo plumbeus, V. vicinior, V. swainsoni, V. pusillus;* 8, *Chrysomitris lawrencei;* 9, *Aegiothus exilipes;* 10, *A. fuscescens;* 11, *Leucosticte griseinucha;* 12, *Passer domesticus;* 13, *Passerculus alaudinus;* 14, *Zonotrichia belli;* 15, *Pipilo albigula;* 16, *Cardinalis igneus;* 17, *Cyanura macrolophus;* 18, *Contopus pertinax;* 19, *Mitrephorus fulvifrons;* 20, *Nephœcetes niger;* 21 *Atthis heloisæ;* 22, *Heliopœdica xantusi;* 23, *Stellula calliope;* 24, *Xenopicus albolarvatus;* 25, *Sphyrapicus thyroideus;* 26, *Colaptes chrysoides;* 27, *Scops kennicotti;* 28, *S. flammeola;* 29, *Microthene whitneyi.*

Vol. II, plate 30, *Falco candicans;* 31, *F. islandicus;* 32, *F. aurantius;* 33, *Buteo zonocercus;* 34, *Haliœtus pelagicus;* 35, *H. albicilla;* 36, *Cathartes burrovianus;* 37, *Scardafella inca;* 38, *Meleagris mexicana;* 39, *Podasocys montanus;* 40, *Macrorhamphus scolopaceus;* 41, *Ereunetes occidentalis;* 42, *Chen albatus;* 43, *Chen caerulescens;* 44, *Exanthemops* (g. n.) *rossii;* 45, *Chloephaga canagica;* 46, *Bucephala islandica;* 47, *Lampronetta fischeri;* 48, *Somateria v-nigra;* 49, *Graculus bairdii;* 50, *G. perspicillatus;* 51, *G. cincinnatus;* 52, *Larus californicus, L. occidentalis;* 53, *L. brachyrhynchus, L. hutchinsii;* 54, *Rissa kotzebui, R. nivea;* 55, *Stercorarius catarractes;* 56, *Thalasseus caspius;* 57, *Haliplana discolor;* 58, *Diomedea chlororhynchus;* 59, *Ossifraga gigantea;* 60, *Æstrelata hæsitata;* 61, *Cymochorea melania, Halocyptena microsoma;* 62, *Nectris amaurosoma, N. fuliginosus;* 63, *Colymbus adamsi;* 64, *Podiceps californicus;* 65, *Fratercula glacialis;* 66, *Sagmatorrhina lathami;* 67, *Phaleris tetracula;* 68, *P. pusillus;* 69, *Ptychorhamphus aleuticus;* 70, *Ombria psittacula;* 71, *Brachyrhamphus temminckii;* 72, *B. hypoleucus.* But the assignment of plates to species by number, as here given, differs in the "List of plates and species", and this again is different from the order in which they were published; so that, the pll. not being numbered on their face, the confusion in citing them becomes complete and endless.

1867. ALLEN, J. A. Winter Notes of an Ornithologist. < *Am. Nat.*, i, 1867, pp. 38–48.

Relates to Massachusetts –55 or 60 spp. there in winter, consisting mainly of permanent residents and visitors from the North.

1867. ALLEN, J. A. Ornithological Calendars. < *Am. Nat.*, i, 1867, pp. 54 [for March], 109 [for April], 160 [for May].

Appearances of migratory birds in Massachusetts in the spring months.

1867. ALLEN, J. A. The Birds of Spring. < *Am. Nat.*, i, 1867, pp. 141–144.

Relates to New England—280 spp. there at the season named.

1867. [ANON.] Prodrome of a work on the Ornithology of Arizona Territory. By Elliott Coues, M. D., U. S. A. Philadelphia. 1866. 8vo. pp. 64. < *Am. Nat.*, i, 1867, pp. 209, 210.

A review of this paper, supposed to be by the editors of the journal cited.

1867. [ANON.] Ornithology and Oology of New England. By Edward A. Samuels. Boston: Nichols & Noyes. 1867. 8vo. Illustrated. < *Am. Nat.*, i, 1867, pp. 318–320.

A review of this work, supposed to be by the editors of the journal cited.

1867. BAIRD, S. F. The Distribution and Migrations of North American Birds. < *Ibis*, 1867, 2d ser., iii, pp. 257–293.
Reprinted from *Am. Journ. Sci. and Arts*, xli, Jan., Mar., May, 1866.

1867. BREWER, T. M. Some Errors regarding the Habits of our [North American] Birds. < *Am. Nat.*, i, 1867, pp. 113–123.
Cf. Ibis, 1868, p. 347.—Corrections of Wilson, Nuttall, Audubon, and Brewer.

1867. BOUVÉ, T. T. [Announcement of the death of Henry Bryant.] < *Proc. Boston Soc. Nat. Hist.*, xi, 1867, pp. 134–136.

1867? BRYANT, H. Additions to a List of Birds Seen at the Bahamas. < *Proc. Boston Soc. Nat. Hist.*, xi, 1867, pp. 63–70. [Pub. 1866?]
31 spp. *Leucominus*, *Skotiomimus*, p. 68, genn. nn.; *Psittacus collarius* var. *bahamensis*, p. 65; *Tyrannula stolida* var. *lucayensis*, p. 66; *Geothlypis rostratus*, p. 67, woodc., spp. nn. *Cf. Pr. Bost. Soc.*, vii, p. 102; *Ibis*, 1868, pp. 229, 230; *Zool. Rec. for* 1867, p. 68.

1867. [COUES, E.] The Birds of New England. < *The Round Table* (newspaper, New York), No. 140, Sept. 28, 1867, pp. 213, 214.
Extended review of Samuels's Ornithology and Oölogy of New England.

1867. COUPER, WM. [Annotated List of the Birds of Quebec, Lower Canada]. < *E. A. Samuels's Ornith. and Oöl. of New England*, pp. 80, 81, 368–372, 396, 477, 478, 571–573.

1867. FOWLER, A. The breeding habits of [three New England] Birds. < *Am. Nat.*, i, 1867, pp. 496, 497.
Criticising E. A. Samuels's statements respecting *Ceryle alcyon*, *Scops asio*, and *Circus hudsonius*.

1867. HARTT, C. F. The recent Bird Tracks of the Basin of Minas [in Nova Scotia]. < *Am. Nat.*, i, 1867, pp. 169–176, 234–243.
Popular observations, leading up to geological considerations, in similar style, on the same subject.

1867. JONES, J. M. A Fortnight in the Backwoods of Shelburne and Weymouth. < *Trans. Nova Scotia Inst. Nat. Sci.*, ii, pt. i, 1867, pp. 48–60.
Ornithological *passim*.

1867. SAMUELS, E. A. Ornithology and Oölogy | of | New England: | containing | full description of the birds of New England, and adjoining | States and Provinces, | arranged by a long-approved classification and nomenclature; | together with | a complete history of their habits, times of arrival and departure, | their distribution, food, song, time of breeding, and | a careful description of their nests and eggs; | with | Illustrations of many Species of the Birds, and accurate Figures | of their Eggs. | By Edward A. Samuels, | Curator of Zoology in the Massachusetts State Cabinet. | Boston: | Nichols and Noyes. | 117, Washington Street. | 1867. 1 vol. 8vo. pp. vii, 583, figg. (not numbered), pll. iv.
A popular book, received with general favor, except by ornithologists. Classification and nomenclature those of Prof. Baird, from whose work (*B. N. A.*, 1858) the whole of the technical and descriptive matter is taken. Main text largely extracted from Wilson, Nuttall, and Audubon. The illustrations consist of a number of small woodcuts, some of them new, and a series of full-paged ones (nearly the same that appeared in a Patent Office Report—redrawn on wood from Audubon's 8vo ed.). The 4 pll. are colored illustrations of the eggs of 30 spp., and constitute the leading feature of the work. Mr. Wm. Couper contributes

1867. SAMUELS, E. A.—Continued.

an annotated List of the Birds of Quebec (see COUPER, 1867). *Cf. Am. Nat.*, 1867, pp. 318–320; "*The Round Table*", newspaper (New York), No. 140, Sept. 28, 1867, pp. 213, 214; *Pr. Essex Inst.*, v, 1868, p. 252; *Zool. Rec. for* 1867, pp. 67, 68. There are sundry later editions, *q. v.*

1867. STIMPSON, W. Illustrations of North American Birds in the Museum of the Chicago Academy of Science. < *Trans. Chicago Acad.*, i, pt. i, 1867, pp. 128, 129, pll. xvi–xix.

4 spp.: *Rhamphocœlus passerinii*, pl. xvi; *Chrysomitris bryantii*, pl. xvii; *Grus americanus*, pl. xix; *Anser cœrulescens*, pl. xviii.

1867. TRIPPE, T. M. The Awakening of the Birds. < *Am. Nat.*, i, 1867, pp. 401–403.

Hours of the day at which several species of N. Am. birds begin to sing.

1867. WYMAN, J. An account of some Kjœkkenmœddings, or Shell-heaps, in Maine and Massachusetts. < *Am. Nat.*, i, 1867, pp. 561–584 (especially p. 578, *seq.*), pll.

Remains of various birds noted, especially of *Alca impennis*.

1868. ABBOTT, C. C. Catalogue of Vertebrate Animals of New Jersey. < *Cooke's Geol. of New Jersey*, 1868, *App. E.*, pp. 751–830.

Birds, pp. 761–798—an extensively annotated list of about 301 spp., forming quite a treatise on the subject. The names are very badly printed.

1868. ALLEN, J. A. Notes on Birds observed in Western Iowa, in the months of July, August and September; also on Birds observed in Northern Illinois in May and June, and at Richmond, Wayne Co., Indiana, between June third and tenth. < *Mem. Bost. Soc. Nat. Hist.*, i, pt. iv, art. xiii, Dec., 1868 (read June, 1868), pp. 488–526. (Also issued separately, 4to, paper.)

Very full: includes some critical commentary on geographical distribution in general, and on relationships of certain disputed species. Iowa, 108 spp.; Illinois, *a*, Ogle Co., 84 spp.; *b*, Cook Co., 94 spp., with monographic account of certain *Turdidæ*; Indiana, 72; the annotations in each case chiefly field-notes.

"Range in the breeding-season must form the basis for defining the limits of different ornithological districts . . . . Among migrants of the same species the examples which arrive in spring the earliest are bigger and more brightly tinted than those which come later, and, conversely, on their return the examples last seen are bigger than the summer specimens. Hence it would appear that the largest individuals are those which go furthest north in summer, and, he also adds, are those which live further north in winter. Some characteristics of the ornithological provinces of North America are next briefly mentioned; and then follow the lists of the species observed, as stated in the title. In Iowa about 108 or 110 species were seen, of which at least 100 breed in the State. For Illinois two lists are given, one of 84 species in Ogle County, the other of 94 species in Cook County. At Richmond 72 species were observed by himself and Dr. Haymond. Some critical notes on supposed species (*Turdidæ*, *Laridæ*) are added in the course of the paper."—*From Zool. Rec.*

1868. ALLEN, J. A. [Abstract of a paper on the Birds of Iowa and Illinois, with special reference to their migration.] < *Proc. Boston Soc. Nat. Hist.*, xii, 1868, p. 85.

See the full memoir, cited above.

1868. [ANON.] The Ornithology and Oology of New England. < *Harper's New Monthly Mag.*, xxxvii, 1868, p. 712.

Being a review of E. A. Samuels's Birds of New England.

1868. BREWER, T. M. Song-birds of North America. < *Atlantic Almanac.*

1868. BROWN, R. Synopsis of the Birds of Vancouver Island. < *Ibis*, 1868, 2d ser., iv, pp. 414–428.

List of 153 spp. (5 of which are doubtful), briefly annotated; preceded by sketch of the locality and some slight bibliography; followed by a nominal list of numerous (62 spp.) birds to be looked for on the island. *Cf. Zool. Rec. for* 1868, p. 53.

1868. BUTCHER, H. B. List of Birds collected at Laredo, Texas, in 1866 and 1867. < *Proc. Acad. Nat. Sci. Phila.*, xx, 1868, pp. 148–150.

A nominal list of 89 spp., with dates of observation.

1868. COUES, E. List of Birds collected in Southern Arizona by Dr. E. Palmer; with remarks. < *Proc. Acad. Nat. Sci. Phila.*, xx, 1868, pp. 81–85.

56 spp., 4 additional to former paper in *Proc. Phila. Acad.*, 1866, *q. v.* Collector's field-notes. *Cf. Ibis*, 1868, p. 485; *Zool. Rec. for* 1868, p. 53.

1868. COUES, E. Synopsis of the Birds of South Carolina. < *Proc. Boston Soc. Nat. Hist.*, xii, 1868, pp. 104–127.

294 spp., fully annotated, partly compiled. Preliminary general considerations. Peculiar species indicated. *Cf. Ibis*, 1869, pp. 118–120; *Zool. Rec. for* 1868, p. 53.

1868. COUES, E. Catalogue of the Birds of North America contained in the Museum of the Essex Institute;—with which is incorporated A List of the Birds of New England. With Brief Critical and Field Notes. < *Proc.* (*Comm.*) *Essex Inst.*, v, 1868, art. xii, pp. 249–314.

Preceded by bibliography and general considerations; the Museum Catalogue and Faunal List typographically distinguished. 335 New England spp., and various probabilities indicated. Oversheets of this paper were issued separately, repaged, with new title and index, giving the Faunal List the precedence over the Museum Catalogue. *Cf. Ibis*, 1869, pp. 228, 229; *Zool. Rec. for* 1868, p. 53.

1868. COUES, E. A List | of the | Birds of New England. | By Elliott Coues, | Assistant Surgeon, U. S. A. | — | [Reprinted from the Proceedings of the Essex Institute, Vol. V.] | — | Salem, Mass. | Essex Institute Press. | 1868. 8vo. 1 vol., paper. pp. 71.

Pages 1–66 correspond with pp. 249–314 of the *Essex Institute Proceedings;* pp. 67–71 is an index, not in the original issue. Only 50 copies extant.

1868. DUGÈS, A. Aperçu général sur la faune de Guanajuato (Mexique). < *Bull. Soc. Acclim.*, 2e sér., v, 1868, pp. 545–578, figg.

Oiseaux, pp. 558–560, 562–567. *Cf. Zool. Rec. for* 1868, pp. 53, 54.

1868. [EDITORS.] The Distribution of our [North American] Birds in the Breeding Season. < *Am. Nat.*, ii, 1868, p. 329.

Editorial notice of a circular of Professor Agassiz's, asking for information in the matter.

1868. FROST, S. T. Survivors of Civilization. < *Harper's New Monthly Mag.*, xxxvi, 1868, pp. 471–475.

Wild birds lingering along the Hudson River.

1868. GUNN, D. Notes of an Egging Expedition to Shoal Lake, west of Lake Winnepeg. <(*Twenty-second*) *Ann. Rep. Smiths. Inst.* (*for* 1867), 1868, pp. 427–432.

The ornithological matter, as apart from the personal narrative, relates chiefly to habits of *Podiceps occidentalis* and some other water birds.

1868. KINNEY, D. F. Report [to the Illinois State Horticultural Society] on [6 spp. of fruit-eating] Birds. < *Trans. Illinois State Agric. Soc. for* 1865–66, vi, 1868, p. 371.

1868. MINIER, G. W. Report of Special Committee [to the Illinois Horticultural Society] on Birds [injurious or beneficial to Horticulture]. < *Trans. Illinois State Agric. Soc. for* 1865–66, vi, 1868, pp. 396–406.

Consisting mainly of letters addressed to him by various persons, and minutes of a discussion in meeting.

1868. SAMUELS, E. A. Among the Birds: | A series of sketches for | young folks, | illustrating the | Domestic Life of Our Feathered Friends. | By | Edward A. Samuels, | author of "Ornithology and Oölogy of New England," | "Mammalogy of New England," etc. | Boston: | Nichols and Noyes. | 1868. 1 vol. 16mo. pp. viii, 223, pll. iv, woodcc.

An agreeable little book, well adapted to interest the young folks in birds.

1868. SAMUELS, E. A. The Breeding Habits of [three species of] Birds. *Am. Nat.*, ii, 1868, pp. 47, 48.

Reply to A. Fowler's strictures, *op. cit.*, i, 1867, 496.

1868. SAMUELS, E. [A.] Our Neighbors the Birds. < *Harper's New Monthly Mag.*, xxxvii, Oct., 1868, pp. 661–666.

Biographical notes of some New England birds.

1868. SAMUELS, E. A. Value of Birds on the Farm. < *Rep. U. S. Agric. Dept. for* 1867, 1868, pp. 201–208.

1868. SEARS, J. H. Return of the Birds. < *Am. Nat.*, ii, 1868, p. 162.

Dates of arrival of 21 spp. at Danvers, Mass., spring of 1868.

1868. STRECKER, H. Albinism in Birds [Dolichonyx oryzivorus, Turdus migratorius]. < *Am. Nat.*, ii, 1868, pp. 491, 492.

1868. WOOD, W. A Review of some of the Articles published in this Journal respecting the Habits and Nesting of our [North American] Birds, with Additional Facts. < *Am. Nat.*, ii, 1868, pp. 377–380.

Refers chiefly to articles by Endicott, Fowler, and Samuels.

1869. A[LLEN], J. A. W. L. T., Minneapolis, Minn. < *Am. Nat.*, iii, 1869, p. 504.

Notes on *Vireosylvia philadelphica* and *Empidonax flaviventris*.

1869. BAILY, W. L. Our own Birds | a familiar natural history | of the | Birds | of | the United States. | By William L. Baily. | — | Revised and edited by | Edward D. Cope, | Corresponding Secretary of the Academy of Natural Sciences. | — | Philadelphia: | J. B. Lippincott & Co. | 1869. 1 vol. 16mo. pp. i–x, 11–265, many cuts, in text and on sep. pages.

"The object of this book is not to treat the subject of Ornithology scientifically, but simply to present in a concise and familiar manner to the youthful reader, some interesting facts relating to the birds of our own country"—(preface)—an object accomplished in a very readable manner. The book is profusely illustrated with cuts, mostly from Audubon originally and from Samuels immediately, but many of them are original.

1869. BAIRD, S. F. On Additions to the Bird-Fauna of North America, made by the Scientific Corps of the Russo-American Telegraph Expedition. < *Trans. Chicago Acad.*, i, pt. ii, 1869, pp. 311–325, pll. xxvii–xxxiv.

1869. BAIRD, S. F.—Continued.

Scops kennicottii, pl. xxvii; *Budytes flava*, pl. xxx, f. 1; *Phyllopneuste kennicotti*, sp. n., p. 313, pl. xxx, f. 2; *Troglodytes alascensis*, sp. n., p. 315, pl. xxx, f. 3; *Pyrrhula coccinea* var. *cassinii*, var. n., pl. xxix, f. 1; *Leucosticte griseinucha*, pl. xxviii, f. 2; *L. littoralis*, sp. n., p. 318, pl. xxviii, f. 1; *Melospiza insignis*, sp. n., p. 319, pl. xxix, f. 2; *Spermophila badiiventris* "Lawr.", pl. xxviii, f. 3; *Limosa uropygialis*, pl. xxxii; *Sterno aleutica*, sp. n., p. 321, pl. xxxi, f. 1; *Graculus bicristatus*, pl. xxxiii; *Puffinus tenuirostris*, pl. xxxiv, f. 2; *Fulmarus rodgersi*, pl. xxiv, f. 1; *Larus borealis*; *Simorhynchus cassini*, pl. xxxi, f. 2.

An important paper, adding several Old World forms to the American fauna. All the new species were named in Dall and Bannister's immediately preceding paper, but are here first characterized. The connection of the *Spermophila* with the other subjects of the paper is not obvious; it belongs to tropical America. See 1869, DALL *and* BANNISTER.

1869. BENTON, M. B. Shy Friends. < *Putnam's Magazine*, iv (new series), 1869, pp. 85–92.

Biographical notes upon several birds, and comments upon the attraction civilization has for them.

1869. BOARDMAN, G. A. Breeding of [five species of] Rare Birds [at Milltown, Maine]. < *Am. Nat.*, iii, 1869, p. 222.

1869. BOARDMAN, G. A. The Black Vulture in Maine. < *Am. Nat.*, iii, 1869, p. 498.

Occurrence of *Cathartes atratus*, and also of *Gallinula martinica*, at Calais.

1869. BREWER, T. M. [Obituary notice of John Cassin.] < *Am. Journ. Sci.*, xlvii, 1869, pp. 291, 292, 435.

Born September 6, 1813, Upper Providence Township, Delaware County, Pa.; died January 10, 1869, at Philadelphia, Pa., *æt.* 57.

1869. BREWER, T. M. Sea-side Ornithology. < *Am. Nat.*, iii, 1869, pp. 225–235.

Remarks on the birds of the New England coast.

1869. [BREWER, T. M.] John Cassin. < *Bull. Essex Inst.*, i, No. 1, 1869, pp. 15, 16.

A short obituary.

1869. COOPER, J. G. The Fauna of Montana Territory. < *Am. Nat.*, ii, 1869, pp. 596–600; iii, 1869, pp. 31–35, 73–84. Corrections, p. 224.

About 110 spp. are included.

1869. COOPER, J. G. The Naturalist in California. < *Am. Nat.*, iii, 1869, pp. 182–189, 479–481.

Contains notices of birds seen on the Plains of Los Angeles, the Cajon Pass, the Desert, and the Colorado Valley.

1869. COOPER, J. G. Notes on the Fauna of the Upper Missouri. < *Am. Nat.*, iii, 1869, pp. 294–299.

Includes a good many ornithological notes.

1869? COOPER, J. G. Some recent additions to the Fauna of California. < *Proc. Cal. Acad. Sci.*, iv, (1868), pp. 3–13. [Pub. 1869?]

"Ornithology occupies the most of this paper (pp. 7–13); and it contains notes on upward of 50 spp. out of 353 now known to occur within the limits of the State, an increase of 33 since the author's former estimate in 1862 (*op. cit.*, iii, p. 23)."—*Zool. Rec. for* 1869, p. 46.

1869. COUES, E. Sea-side Homes [North Carolina]: and what lived in them. < *Am. Nat.*, iii, 1869, pp. 337–349.

Relates chiefly to the breeding of *Sterna antillarum* and *Ægialitis wilsonia*.

1869. DALL, W. H., *and* BANNISTER H. M. List of the Birds of Alaska, with Biographical Notes. < *Trans. Chicago Acad. of Nat. Sci.*, i, 1869, pp. 267–310, pll. xxvii–xxxiv.

Also found separately, with or without the plates, original pagination preserved. 212 spp., extensively annotated. Several new species, named and figured in this paper, are not described, however, until later in the same vol., in a special paper by S. F. Baird (one of them is from Central America). Baird's article is a continuation of the present. The plates belong to either article. This is a very notable contribution to a little-known avi-fauna, the field-notes being especially valuable. It gives some species new to science, and various others new to the N. A. fauna. *Cf. Am. Nat.*, 1870, pp. 367–371; *Ibis*, 1870, pp. 520–522; *Zool. Rec.*, vi, p. 47. See 1869, BAIRD, S. F.

1869. DUGÉS, A. Catálogo de Animales Vertebrados observados en la República Mexicana. < *La Naturaleza*, i, 1869, pp. 137–145.

Aves, pp. 138–143; 190 especies.—Los nombres científicos, vulgares, y mexicanos (de la historia de Hernandez). En cuanto al lugar de cada pájaro, el nombre de los Estados.

1869. FOWLER, A. The Butcher Bird [Lanius borealis] and Mottled Owl [Scops asio]. < *Am. Nat.*, ii, 1869, p. 659.

Biographical notes.

1869. JONES, C. M. The Breeding Habits of Birds . . . . < *Am. Nat.*, iii, 1869, pp. 48, 49.

Notes on *Ceryle alcyon*, *Otus vulgaris*, *Rallus longirostris*, *Bonasa umbellus*, *Circus hudsonius*.

1869. JONES, J. M. On some of the Rarer Birds of Nova Scotia. < *Trans. Nova Scotia Inst. Nat. Sci.*, ii, pt. ii, 1868 (pub. 1869), pp. 70–73.

Generalities of the subject—6 spp. in particular. *Ardea alba* (*i. e.*, *Herodias egretta*), *Ardea candidissima*, and *Tringa subarquata* are the only notables.

1869. HAYMOND, R. Birds of Franklin County, Indiana. < *Cox's Geol. Surv. Indiana*, *First Ann. Rep. for* 1869, 1869, pp. 209–235.

An annotated list of 164 spp.

1869. MAURY, T. B. The Dumb Guides to the Pole. < *Putnam's Mag.*, iv (new series), 1869, pp. 727–740.

Birds in boreal latitudes, indicating an open polar sea.

1869. [MUNGER, C. A.] Four American Birds. < *Putnam's Monthly Mag.*, iii (new series), June, 1869, pp. 725–731.

Popular account of *Icterus baltimore*, *Dolichonyx oryzivora*, *Turdus mustelinus*, *Antrostomus vociferus*.

1869. NAUMAN, C. H. Ornithological. < *Am. Nat.*, iii, 1869, p. 390.

22 eggs from a nest of *Troglodytes ædon*; 28 from a nest of *Tyrannus carolinensis*, etc.

1869. [NEWTON, A.] [Obituary notice of J. Cassin.] < *Ibis*, 2d ser., v, 1869, p. 244.

1869. REEKS, H. Notes on the Zoology of Newfoundland. < *Zoologist*, 2d ser., iv, 1869, pp. 1609–1614, 1689–1695, 1741–1759, 1849–1858.

Includes 212 spp.

1869. RIDGWAY, R. Notices of certain obscurely known Species of American Birds. < *Proc. Acad. Nat. Sci. Phila.*, xxi, 1869, pp. 125–135, woodcc.

I. The North American Woodthrushes, *Hylocichla*, 7 spp. II. On the uniformly red species of *Pyranga*, 6 spp.; *P. cooperi*, n. s., p. 130, fig. III. The smaller *Quiscali* of the United States, 3 spp.; *Q. æneus*, n. s., p. 134, f. 2. *Cf. Ibis*, 1870, pp. 281, 282.

1869. SCLATER, P. L., and SALVIN, O. On a Collection of Birds made by Mr. H. S. le Strange near the city of Mexico. < *P. Z. S.*, xxxvii, 1869, pp. 361.

Critical notes on 15 of the 262 spp. in the collection.

1869. SUMICHRAST, F. The Geographical Distribution of the Native Birds of the Department of Vera Cruz, with a List of the migratory species. By F. Sumichrast. Communicated to the Smithsonian Institution, and published by permission of the Secretary. Translated from the French [MSS.], by T. M. Brewer. < *Mem. Bost. Soc. Nat. Hist.*, i, pt. iv, art. xvi, Mar. 1869 (read Dec. 1868), pp. 542–563, woodc. 1. (Issued separately, 4to, paper.

175 spp., fully annotated; with *résumé* giving lists of the species of the hot, temperate, and alpine regions respectively; with a special note on habits of *Melanerpes formicivorus*. Only land birds are treated. This article is the most important one upon regional ornithology of Mexico. *Cf. Zool. Rec. for* 1869, vi, p. 48; *Ibis*, 1870, pp. 278–280.

1869. SUMICHRAST, F. [Abstract of a paper on the geographical distribution of the native birds of the Department of Vera Cruz, Mexico.] < *Proc. Bost. Soc. Nat. Hist.*, xii, 1869, pp. 222–225.

Nominal list of 74 spp. of the hot region, 27 of the temperate region, 52 of the alpine region.

1869? TERRILL, J. J. G. [Analytical chart of the Birds of Canada.]

Not seen. *Cf. Canad. Nat. and Geol.*, n. s., iv, 1869, p. 101. "242 spp."

1869. TURNBULL, W. P. The | Birds of East Pennsylvania | and New Jersey | By | William P. Turnbull. LL. D. | Author of the "Birds of East Lothian;" | Member of the Academy of Natural Sciences of Philadelphia; | Of the Lyceum of Natural History, New York; | Corresponding Member of the Natural History Society of Glasgow, etc. | [Illustration of Sturnella magna.] | Glasgow: Printed for private circulation [by A. K. Murray & Co.]. | 1869. 1 vol. roy. 8vo, and also in 4to. pp. xii, 62, with 20 illustrations drawn on stone by Frank Bott, some being from the portfolio of Alexander Wilson, one of them bearing his autograph and date of 1805.

"The object of the writer has been to present in a simple and compact form the Ornithology of a small portion of North America, comprising that part of Pennsylvania eastward of the Alleghany Mountains, and of New Jersey, including the coast line which extends from Sandy Hook to Cape May" (p. vii). A catalogue of 342 spp.—114 summer visitants, 57 winter visitants, 60 migrants, 52 residents, 59 stragglers—with field-notes of times of appearance, breeding, relative frequency, etc.

This is a sumptuous and elegant book—the *best printed* treatise on American birds extant. One of my amanuenses, being set to the task, reported, "No typographical error found after close scrutiny." The book is scarce—there were only 150 impressions of this lithographic edition, in 8vo (2 of them on vellum), and 50 in 4to. The edition was bought up by J. Sabine & Sons, N. Y., who advertise the 4to copies at $4. There is an American ed., Philadelphia, Grambo & Co., same date, which I believe appeared before the present Glasgow ed.; the two differ in the words "popetue" and "virginianus"; but this is the only textual discrepancy I have found. The work was edited by Robert Gray, of Glasgow, though the fact does not appear. *Cf. Ibis*, 1870, 126, and *Zool. Rec. for* 1869, p. 49.

1869. TURNBULL, W. P. The | Birds of East Pennsylvania | and New Jersey. | By | William P. Turnbull. LL. D. | Author of the "Birds of East Lothian;" | Member of the Academy of Natural Sciences of Philadelphia; | of the Lyceum of Natural History, New York; | Corresponding Member of the Natural History Society of Glasgow, etc. | ——— aves, solatia ruris, | Assuetum silvis, innocuumque genus, | Quæ facitis nidos, quæ plumis ova fovetis, | Et facili dulces editis ore modos.—Ovid. | Philadelphia: | Henry Grambo & Co., Chestnut Street. | 1869. 1 vol. 8vo, pamphlet. 2 p. ll. (title, dedication), pp. v–viii (preface), 5–50; no illust.

The main text, pp. 5–50, is *verb. lit. punct.* identical with that of the Glasgow edition (apparently from the same plates), and is the same page for page; but the pagination is different, owing to omission of the illustrations of the other edition; the preface is abridged, and modified in one place; the title-page is altered by substitution of the quotation from Ovid for the picture of *Sturnella magna* of the original. The name of the *Chordiles* is changed. This edition is common, and sells for one-third the price of the other, to which it is inferior in style, though still a handsome pamphlet. It was issued in paper covers, the title on the wrapper being the same as that inside, but without punctuation, with omission of the author's titles, and substitution of an engraving of two birds for the Latin quotation. The customary quotation of the work is according to the pagination of this edition, the original not being generally accessible.

1869. VILLADA, M. M. Aves del Valle de México. < *La Naturaleza*, i, 1869, pp. 94–100, 146–154.

Con la colaboracion de D. Antonio Peñafiel y D. Jesus Sanchez.

1869–70. ALLEN, J. A. Notes on some of the Rarer Birds of Massachusetts. < *Am. Nat.*, iii, 1869, pp. 505–519; iii, 1870, pp. 568–585, 631–648.

315 spp. [*cf.* footnote, p. 647] in Massachusetts. The paper is supplementary to the author's Massachusetts catalogue published five years before in *Proc. Essex Inst.*; it contains critical comments on the rarer or less generally known species, and discusses the cases of some doubtful ones. The supposed *Buteo* "*cooperi*" proved to be *lineatus*.

1870. ABBOTT, C. C. Notes on certain inland Birds of New Jersey. < *Am. Nat.*, iv, 1870, pp. 536–550.

Miscellaneous observations on about 30 spp.

1870. ALLEN, J. A. Catalogue of the Birds of Iowa. < *White's Geolog. Survey of Iowa*, vol. ii, 1870, Appendix B, pp. 419–427. (Des Moines, Iowa. 8vo. pp. viii, 443.)

Nominal list of 283 spp., those actually observed to breed within the limits of the State being marked with an asterisk. A few of the species are to be regarded rather as stragglers, chiefly winter visitors from the North; some, however, from the West and South.

1870. BAIRD, S. F. Fossil Birds of the United States. < *Harper's New Monthly Mag.*, xl, 1870, pp. 467, 469, and 470.

Brief notices of current discoveries.

1870. BAIRD, S. F. New link between Reptiles and Birds. < *Harper's New Monthly Mag.*, xl, 1870, p. 628. See, also, p. 469.

1870. BRENDEL, F. The Fauna of Peoria. Forming Chap. xxxix, pp. 217–223, of "The History of Peoria, Illinois." By Chas. Ballance. 16mo? Peoria, 1870.

Barely annotated list of 176 spp. of birds.

1870. BURLING, GILBERT. American Birds. <*Appleton's Journ.*, iv, 1870, pp. 256, 308, 408, 520; 6 illust. of common species.

1870. CHADBOURNE, P. A. Birds of the North. < *Putnam's Magazine*, v (new series), 1870, pp. 636–639.

1870. COOPER, J. G. Geological Survey of California. | J. D. Whitney, State Geologist. | — | Ornithology. | Volume I. | Land Birds. | Edited by S. F. Baird, | from the manuscript and notes of | J. G. Cooper. | — | Published by Authority of the Legislature. | 1870. 1 vol. (no 2d vol. has appeared to date) large 8vo. 1 p. l., pp. xi, 591, many woodcc.

A general account of the birds of the State (and some others). System and nomenclature closely according to Baird (1858), from which most of the synonymy and much of the technical matter are taken. Dr. Cooper's biographical and general matter. Introduction by J. D. Whitney. Illustrations consist of small full figures of a species of each genus, with many life-size figures of heads and other parts, together with outlines of generic details; nearly all from nature, drawn by E. Sheppard, J. H. Richard, H. W. Elliott, and A. Schönborn, cut by H. H. Nichols, the outline details engraved by the Jewett process. These cuts are remarkable for artistic excellence and practical utility. Most of them reappear in BAIRD, BREWER, and RIDGWAY'S *History of N. A. Birds*. Appendix by S. F. Baird, containing 2 additional spp. (*Dendrœca graciæ* Coues; *Junco annectens*, sp. n., p. 564); a copious glossary of technical terms, a list of Spanish names of Californian birds, the latter by J. Xantus; and indexes of scientific and vernacular names. The work has been pronounced rather disappointing to the general student (*cf. Zool. Rec. for* 1870), and advances the science less than was to have been anticipated. *Cf. Ibis*, 1871, pp. 481, 482.

1870. COOPER, J. G. The Fauna of California and its geographical Distribution. < *Pr. Cala. Acad. Sci.*, iv, Feb., 1870, pp. 61–81.

1870. COPE, E. D. Observations on the Fauna of the Southern Alleghanies. <*Am. Nat.*, iv, 1870, pp. 392–402.

The remarks chiefly relate to distribution during the breeding season.

1870. [COUES, E.] Ornithological Results of the Exploration of the Northwest. <*Am. Nat.*, iv, 1870, pp. 367–371.

An extended anonymous review of Messrs. W. H. Dall and H. M. Bannister's and S. F. Baird's papers in vol. i, arts. ix, x, of the *Chicago Academy's Transactions*, on the Birds of Alaska, *q. v.*, 1869.

1870. DALL, W. H. Alaska | and | its Resources. | By W. H. Dall, | Director of the Scientific Corps of the late Western Union | Telegraph Expedition. | [Design.] | Boston: | Lee and Shepard. | 1870. 1 vol. large 8vo. pp. xii, 627, map, engrs., and woodcc. >Appendix, pp. 527–609.

Contains, pp. 580–586, an annotated list of the Birds of Alaska, with 3 figg. Also slightly ornithological *passim*, *e. g.*, p. 235, fig.

1870. DALL, W. H. A Winter's Day in the Yukon Territory. <*Am. Nat.*, iv, 1870, pp. 218–225.

1870. DUGÉS, A. Catálogo de Animales Vertebrados observados en la república Mexicana. < *Naturaleza*, i, 1870, pp. 137–145.

Aves, pp. 138–143; 228 spp.—"Los nombres vulgares indicados son los que se usan en Guanajuato; los mexicanos los he sacado de la Historia de Hernandez. En cuanto al lugar de cada animal, el nombre de los Estados, me he limitade á dar el nombre de los Estados en que yo sé han encontrado." Este catálago fué hecho en Paris con la cooperacion del Sr. D. Julio Verreaux.

1870. [EDITORIAL.] [Obituary notice of Jacob P. Giraud.] < *Am. Journ. Sci.*, 1, 1870, pp. 293, 294.

Died at Poughkeepsie, N. Y., July 19, 1870, *æt.* 59.

1870. [EDITORS.] Alaska and its resources. < *Am. Nat.*, iv, 1870, pp. 430–434.

A review of W. H. Dall's work of the same name (Boston, 1870, 8vo, pp. 627).

1870. FINSCH, O. Ueber eine Vögelsammlung aus Nordwest Mexico. < *Abh. Nat. Ver. zu Bremen*, 1870, pp. 322–363.

44 spp., many of great rarity, chiefly collected by A. J. Grayson at Mazatlan and the Tres Marias; *Calocitta elegans*, n. s. List of 26 papers on Mexican birds. Monographic account of *Otocorys*. *Cf. Ibis*, 1871, 432.

1870. GREGG, W. H. Catalogue of the Birds of Chemung County, New York. 8vo pamph. Elmira, N. Y. 1870. pp. 13.

Ostensibly from the *Proc. Elmira Acad. Sci.* Gives 200 spp., annotated, including several without evidence of their occurrence. *Collyrio chemungensis*, p. 9, sp. n. (= *Lanius borealis*). The paper bristles with typographical errors.

1870. J. F. W[HITEAVES?]. Notes on Canadian Birds. < *Canad. Nat. and Quart. Journ.* (n. s.), v, 1870, p. 103.

Records occurrence of *Falco "candicans"* (?), *Nyctale "albifrons"*, and *Cardinalis virginiana* in Lower Canada.

1870. JONES, J. M. Rare Birds in Nova Scotia. < *Am. Nat.*, iv, 1870, p. 253.

Stercorarius pomatorhinus and *Gallinula martinica*.

1870. MARSH, O. C. Notice of some new Fossil Mammals and Birds, from the Tertiary Formations of the West. < *Am. Journ. Sci.*, 3d ser., ii, 1870, pp. 120–127.

Aquila dananus, Pliocene, Nebraska, p. 125; *Meleagris antiquus*, Post-pliocene, New Jersey, p. 126; *Bubo leptosteus*, Lower Tertiary, Wyoming, p. 126.

1870. MARSH, O. C. Notice of Some Fossil Birds, from the Cretaceous and Tertiary formations of the United States. < *Am. Journ. Sci.*, xlix, 1870, pp. 205–217.

The remains of nine new species of fossil birds, five from the Cretaceous and four from the Tertiary formations, are described. Those from the former belong to extinct and now unrepresented forms; those from the latter are referred to *Puffinus*, *Catarractes*, *Grus*, and *Graculus*.

Laornis edwardsianus, g. sp. n., p. 206. *Palaeotringa littoralis*, g. sp. n., p. 208; *P. vetus*, sp. n., p. 209. *Telmatornis priscus*, g. sp. n., p. 210; *T. affinis*, sp. n., p. 211. *Puffinus conradi*, p. 212. *Catarractes antiquus*, p. 213. *Grus haydeni*, p. 214. *Graculus idahensis*, p. 216, spp. nn.

1870. MARSH, O C. Notice of the Fossil Birds from the Cretaceous and Tertiary Formations of the United States. By Prof. O. C. Marsh. 1 vol. 8vo. pp. 16. (Reprinted from *Am. Journ. Sci.*, Mar., 1870, *q. v.*)

1870. MAYNARD, C. J. Catalogue of the Birds of Eastern Massachusetts, with notes relative to their migration, habits, etc., etc., etc. < *The Naturalist's Guide*, = Part II, pp. 81–170.

The above is the title of Part II of the taxidermal work entitled *The Naturalists's Guide*. It is a very good list of 299 spp., extensively annotated.

1870. REEKS, H. Rare Eggs from North America. < *Zoologist*, 2d ser., v, 1870, pp. 2326, 2327.

Descriptions and measurements of 8 spp.

1870. SAMUELS, E. A. The | Birds of New England. | By | Edward A. Samuels. | . . . | Boston: | Noyes, Holmes, and Company, | 117, Washington Street. | 1870. 1 vol. 8vo. pp. vii, 591, many woodcc., pll. col'd viii.

1870. SAMUELS, E. A.—Continued.

This is an edition of the "Ornithology and Oology of New England", said to be the 5th (?), with the letter-press and woodcc. the same as in the first, being printed from the same stereotype-plates, but with the addition (pp. 575–583) of an Appendix containing 70 (!) spp., mostly those of New England, omitted in the orig. ed.; with new title-page; and with the full-page woodcut illustrations of birds and plates of eggs of the orig. ed. here replaced by eight colored plates of birds, of about six figures each.

1870. SCLATER, P. L., *and* SALVIN, O. On some recent Additions [5 spp.] to the Avifauna of Mexico. < *P. Z. S.*, xxxviii, 1870, pp. 550, 551.

1870. V[ERRILL, A. E.] Geological Survey of California; Ornithology, vol. I. < *Am. Journ. Sci.*, i, 1870, p. 70.

Review of Dr. J. G. Cooper's work, 1870, *q. v.*

1870. WADDLE, W., JUN. The Game Waterfowl of America. < *Harper's New Monthly Mag.*, xl, 1870, pp. 433–437.

1870–71. GOODHUE, D. Catalogue of and Observations on the Birds of Vermont. < *Arch. Sci. and Trans. Orleans Co. Soc.*, i, Nos. 1–3, Oct. 1870–April, 1871.

Not seen—said to contain only the beginning of the article.

1870–71. REEKS, H. Notes on the Birds of Newfoundland. < *Canad. Nat. and Quart. Journ. Sci.* (n. s.), v, 1870–71, pp. 38–47, 151–159, 289–304, 406–416.

From the *Zoologist*, 1869, *q. v.* Field-notes on many spp.

1870–71. SUMICHRAST, F. E. Distribucion geografica de las aves del Estado de Veracruz y lista de las especies emigrantes. < *La Naturaleza*, i, 1870, pp. 298–312; ii, 1871, pp. 29–39.

Traduccion del Señor Don Aniceto Moreno: *Mem. Bost. Soc. Nat. Hist.*, i, 1869, pp. 542–563, *q. v.*

1870–74. [ANONYME.— *L'Abbé* PROVANCHER?] Faune Canadienne. Les Oiseaux. < *Naturaliste Canadien*, ii, 1870, pp. 65–67, 97–103, 125–128, 157–162, 193–196, 224–230, 253–257, 285–288, pl. ii, 317–319, 349–351; iii, 1870, pp. 8–13; iii, 1871, pp. 33–49, 65–69, 97–101, 225, 226, 257, 258, 289–291, 321–325, 355–356; iv, 1872, pp. 6–9, 38–42, 65–68, 96–100, 129–132, 161–164, 192–197, 233–235, 257–260, 289–292, 321–327, 353–358; v, 1873, pp. 7–11, 47–50, 79–84, 111–115, 145–149, 209–212, 342–345, 396–398, 399–404, 431–435, 465–467; vi, 1874, pp. 9–12, 36–39, 68–72, 97–100, 129–133, 161–166, 193–200, 225–250.

Une revue systématique des Oiseaux Canadiens, donnant les caractères spécifiques, génériques, etc., avec quelques observations courtes sur les mœurs appartenantes pour le plûpart à la distribution géographique. En suite, une clef systématique pour l'identification des espèces, etc.

1871. ALLEN, J. A. The Fauna of the Prairies [of the United States]. < *Am. Nat.*, v, 1871, pp. 4–9.

Allusions to various birds at p. 6.

1871. ALLEN, J. A. On the Mammals and Winter Birds of East Florida, with an Examination of certain assumed Specific Characters in Birds, and a Sketch of the Bird-Faunæ of Eastern North America. < *Bull. Mus. Comp. Zool.*, ii, No. 3, 1871, pp. 161–450, pll. iv–viii.

Part I, The Topographical, Climatic, and Faunal Characteristics of East Florida. (Part II, On Mammals.) Part III, On Individual and Geographical Variation among Birds, considered in respect to its bearing upon the value of cer-

1871. ALLEN, J. A.—Continued.

tain assumed specific characters—a highly important philosophic treatise upon the general subject, which is discussed at length with force and logical consistency; the author's broad views upon this subject had at once a marked influence upon ornithological thought. Variation in general size and proportion of parts, both individual and climatic, are illustrated with numerous tables of measurements. An essay on species and varieties follows. Part IV, List of the Winter Birds of East Florida, with annotations,—field-notes, measurements, and much synonymy and technical criticism. Part V, On the Geographical Distribution of the Birds of Eastern North America, with special reference to the number and circumscription of the Ornithological Faunæ. After general introductory remarks, the natural Provinces of the North American Temperate Region are discussed, and the Ornithological Faunæ of the Eastern Province are treated. The following Faunæ are laid down and characterized:—1. Floridan. 2. Louisianian. 3. Carolinian. 4. Alleghanian. 5. Canadian. 6. Hudsonian. 7. American Arctic. Various tabular summaries follow, with general remarks on the distribution and migration of the birds of the Eastern Province. A copious bibliography of American Ornithological literature concludes. The plates illustrate the variation in the bill of many species. The article gained the Humboldt Scholarship, and is one of the most important of American ornithological works. *Cf. Ibis*, 1872, pp. 189–191; *Zool. Rec. for* 1871, pp. 24, 25; *Am. Nat.*, v, 1871, pp. 364–373.

1871. [ANON.] [Biographical notices of certain Birds.] < *Appleton's Journal*, iv, p. *circ.* 258.

1871. [ANON.] Die Leyigh [*sic—lege* Lehigh] Co., landwirthschaftliche Gesellschaft in Pennsylvania setzte 1867 200 Dollar [*sic*] aus, um insektenfressende Vögel aus Deutschland einzuführen. < *Zool. Gart.*, xii, 1871, p. 378.

1871. AUDUBON, J. J. The | Birds of America, | from | drawings made in the United States | and their Territories. | By | John James Audubon, F. R. S., &c.; &c. | Vol. I [–VIII]. | New York: George R. Lockwood, | late Roe Lockwood & Son, | 812 Broadway. [No date. 1871.] Eight vols. imp. 8vo. Vol. I, pp. i–viii, i–xv (memoir), 11–246, pll. 1–70. Vol. II, pp. i–vii, 11–199, pll. 71–140. Vol. III, pp. i–viii, 9–233, pll. 141–210. Vol. IV, pp. i–viii, 9–321, pll. 211–280. Vol. V, pp. i–viii, 9–346, pll. 281–350. Vol. VI, pp. i–vii, 9–298, pll. 351–394. Vol. VII, pp. i–vii, 9–285, pll. 395–440. Vol. VIII, pp. i–viii, 9–256, pll. 441–500.

A reissue of the 8vo 8-vol. ed. of 1865. In citing these 8-vol. eds. be careful to so state, for the pagination changes from the orig. 7-vol. 8vo ed., 1840–44. The numeration of the plates, however, is the same. No one should cite Audubon later than 1840–44 without specifying which of the several editions he means.

1871. BOARDMAN, G. A. Ornithological Notes from Maine. < *Am. Nat.*, v, 1871, p. 662.

Gallinula galeata at Calais, Me.; melanotic *Colaptes auratus;* albino *Fulix affinis; Aythya americana* breeding at Calais, Me.

1871. BRUHIN, T. A. Ueber Ankunft und Brütezeit einiger nordamerikanischen Zugvögel. < *Zool. Gart.*, xii, 1871, pp. 10–18.

On the arrival and breeding of various birds in the vicinity of Milwaukee. The article would not be regarded as authoritative by one familiar with the matters treated.

1871. BURROUGHS, J. [Design.] | Wake-Robin | by | John Burroughs | [Monogram.] | New York | published by Hurd and Houghton | Cambridge: Riverside Press | 1871 1 vol. 16mo. 1 p. l., pp. i–iv, 1 l., pp. 3–231.

1871. BURROUGHS, J.—Continued.

"Though written less in the spirit of exact science than with the freedom of love and old acquaintance, yet I have in no instance taken liberties with facts," . . . (*Extr. from Preface.*) It is a delightful book, mainly about birds of North America, and "in fact," as the author claims, "is a careful and conscientious record of actual observations and experiences, and is true as it stands written, every word of it." There is at least one later edition.

1871. CHITTENDEN, L. E. Occurrence of Land Birds far out at Sea. <*Am. Nat.*, v, 1871, pp. 167, 168.

Six or eight species, 589 miles from New York, lat. 41° 40′N., long. 64° 9′ W. G.

1871. COOPER, J. G. Monterey in the Dry Season. <*Am. Nat.*, iv, 1871, pp. 756–758.

Allusions to numerous birds observed.

1871. COUES, E. Progress of American Ornithology. <*Am. Nat.*, v, 1871, pp. 364–373.

An extended review of J. A. Allen's paper on Florida Birds (*Bull. Mus. Comp. Zool.*, ii, 161, *q. v.*, 1871). *Pipilo alleni*, sp. n., p. 366.

1871. COUES, E. Notes on the Natural History of Fort Macon, N. C., and Vicinity. (No. 1.) < *Proc. Acad. Nat. Sci. Phila.*, xxiii, 1871, pp. 12–49. > II. Birds, pp. 18–47. (Addenda, *op. cit.*, 1878, pp. 22–24.)

122 spp., which came under the writer's personal observation; field-notes, in some cases extended, of habits; little descriptive and no critical or synonymatic matter; description of embryos of *Rallus longirostris;* woodc. of asymmetrical sternum of *Puffinus fuliginosus*. Eleven spp. added in 1878.

1871. EDITORS. Arrival of Birds [4 species, at Salem, Mass.]. <*Am. Nat.*, v, 1871, p. 176.

1871. HARTING, J. E. Catalogue of an Arctic Collection of Birds presented by Mr. John Barrow, F. R. S., to the University Museum at Oxford; with Notes on the Species. <*P. Z. S.*, xxxix, 1871, pp. 110–123.

Most of the specimens obtained during the various Arctic expeditions between 1848 and 1855 came into Mr. Barrow's possession; and this paper shows that many species have a more northern range than was hitherto supposed.—*Zool. Rec.*

1871. J. F. W[HITEAVES?]. Notes on Canadian Birds. < *Canad. Nat. and Quart. Journ.*, v, 1871, pp. 230–231.

Occurrence of 8 spp. near Quebec.

1871. KNEELAND, S. [On the Habits of some of the Water Birds observed between San Francisco and Panama.] <*Proc. Boston Soc. Nat. Hist.*, xiv, 1871, pp. 137–139.

1871. LEWIS, E. J. The American Sportsman, containing hints to Sportsmen, notes on Shooting, and the Habits of the Game-birds. Philadelphia. 8vo. pp. 510, many cuts.

This is not the original edition, which appeared much earlier. The defective title is abstracted from the *Zool. Rec.* The treatise is one of the best and most nearly scientific of the sporting books; more than half the work is given to birds, and a large number of species, particularly *Gallinæ*, *Grallæ*, and *Anseres*, are described and figured, with notes on their habits, and instructions for their destruction.

1871. PALMER, C. Ornithological Notes. <*Am. Nat.*, v, 1871, p. 120.

Ibis ordi, *Perisoreus canadensis*, *Picoides arcticus*, *Pinicola canadensis*, in Maine; ref. to Allen, *op. cit.*, Jan., 1870.

1871. PARKER, H. W. Iowa Birds. <*Am. Nat.*, v, 1871, pp. 168–170.

Adds 54 spp. to the 108 given by J. A. Allen, in a paper on the same subject, *Mem. Boston Soc.*, pt. iv, vol. i, pp. 488–526, 1868, *q. v.*

1871. Ross, A. M. The | Birds of Canada: | with | Descriptions of their Habits, Food, Nests, | Eggs, Times of Arrival and Departure. | By | Alexander Milton Ross, | M. A., M. D., | Member of the Entomological Society of London, England; | Corresponding Member of the Zoological Society of London, England; | Member of the Entomological Society of Canada, etc. | With | Eight Plates and Thirty-eight Woodcuts, expressly | engraved for this work. | Toronto: | Henry Rowsell, King Street. | 1871. 1 vol. 8vo. pp. viii, 132, frontispiece, and 1 l. advt.

A full description of this work is contained on the title-page. Text briefly descriptive and biographical. The birds treated consist of the permanent and summer residents, and also such as regularly or accidentally stop in Canada during the spring and autumn migrations. 307 spp. are treated, 42 of them being illustrated by woodcuts, a few of which are original, the rest being poorly executed copies from Audubon and Wilson. "The text is valueless."—*Zool. Rec.*

1871. [Soubeiran, J. L.] Le commerce des Oiseaux en Amérique. < *Bull. Soc. Acclim.*, 2e sér., viii, 1871, p. 157.

1871. Stevenson, J. A List of Mammals and Birds collected in Wyoming Territory, by Mr. H. D. Smith and Mr. James Stevenson, during the Expedition of 1870. < *Ann. Rep. U. S. Geological Survey of the Territories (Hayden's) for* 1870, 1871, pp. 461–466.

Birds at pp. 462–466; nominal list of 124 spp., with localities of the specimens collected and their number. The list is understood to have Smithsonian authority.

1871. Thorpe, T. B. Bird [wildfowl] shooting on the coast of New Jersey. < *Appletons' Journ.*, vi, Sept., 1871, p. 379, eight illust.

1871. Trippe, T. M. Some Differences between Eastern and Western [North American] Birds. < *Am. Nat.*, v, 1871, pp. 632–636.

Contrasts the habits and manners of a certain few well-known species in populous and thinly settled regions.

1871. Trippe, T. M. Notes on the Birds of Minnesota. < *Proc. (Comm.) Essex Inst.*, vi, 1871, art. vi, pp. 113–119.

An annotated list of 138 spp.; nomenclature and classification of Audubon's *Synopsis*, 1839.

1871. Tristram, H. B. Notes on some Passerine Birds, chiefly Palæarctic. < *The Ibis*, 3d ser., vol. i, No. 2, April, 1871, pp. 231–234.

Contains notes on Alaskan birds collected by Kennicott, Dall, and Bannister. *Saxicola œnanthe* and *Budytes flava* are identical with Palæarctic specimens; *Phyllopneuste kennicotti*, Baird, = *P. borealis*, Blas. A synopsis of the known species of *Pyrrhula* (including *P. cassini*, Baird—a good species) is given. Also, notes on *Anthus cervinus* and its affines.

1871. Walker, B. Two Ornithological Items. < *Am. Nat.*, v, 1871, pp. 437, 438.

Hesperiphona vespertina, Jan. 12, and newly fledged *Eremophila alpestris*, April 15, at Detroit, Mich. Comments by E. C[oues].

[1871.] Wilson, A., *and* Bonaparte, C. L. Wilson and Bonaparte. | — | American Ornithology; | or, | The Natural History | of the | Birds of the United States. | Illustrated with Plates | engraved and colored from original drawings from Nature. | By Alexander Wilson | and | Charles Lucian Bonaparte. | With a Sketch of the Life of Wilson, | By George Ord, F. L. S., | and | A Classification of the genera and species of American Birds, | By Spencer F. Baird, | of the Smithsonian Institution. | Vol. I [II, III]. | Philadelphia: | Porter and Coates. | [No date. 1871.] 3 vols. imp. 8vo, with folio atlas in 2

[1871.] WILSON, A., *and* BONAPARTE, C. L.—Continued.

vols. of 76 + 27 pll. (nearly 400 figg.). Vol. I, pp. cxxxii, 214; II, pp. viii, 9–390; III, pp. viii, i*–xvi*, 9–426.

This late edition of "Ord's Wilson" and "Bonaparte" is a very fine one. Ord's Memoir on Wilson, pp. xi–cxxxii. Bonaparte's portion occupies pp. 135 to end of vol. III. The species are systematically arranged. A novel feature is the interpolation, pp. i*–xvi* of vol. III, of Prof. Baird's *Catalogue of N. Am. Birds*, reprinted from the 8vo ed., 1858. Editor's preface states:—"In preparing for the press this edition of Wilson's Ornithology, the editor has adhered to the original text, correcting only some erroneous references, and a few verbal inaccuracies. . . . The original plates, engraved under the eye of Wilson, are employed in this edition, after having been carefully examined and retouched by Mr. Alexander Lawson, by whom most of them were executed; and who as an engraver of objects of natural history, stands unrivalled. The birds have been colored by skilful artists, from recent specimens, or from the beautiful preparations belonging to the Philadelphia Museum."

The atlas of plates accompanying this edition is in 2 vols. folio, each separately entitled, and both titles are different from that of the vols. of text; so that they will doubtless yet be found quoted in catalogues as different works. The atlas to Wilson's 76 plates is entitled:—American Ornithology; | or, | the Natural History | of the | Birds of the United States. | Plates | engraved and colored from original Drawings taken from Nature. | By | Alexander Wilson. | [Trademark.] | Philadelphia: | Porter & Coates, | 822 Chestnut street. The other atlas, of 27 pll., is simply entitled:—Bonaparte's Ornithology | Plates. Each atlas has a leaf of text (index). The two will probably be found bound together in some cases.

1872. ALLEN, J. A. Ornithological Notes from the West. < *Am. Nat.*, 1872, pp. 263–275, 342–351, 394–404.

These articles contain a summary of a paper in *Bull. Mus. C. Z.*, iii, pp. 113–183.

1872. A[LLEN], J. A. Birds of Kansas. < *Am. Nat.*, vi, 1872, pp. 359, 360.

A review of F. H. Snow's *Birds of Kansas* (8vo, 1872, pp. 8).

1872. A[LLEN], J. A. Ornithological Works in Prospect. < *Am. Nat.*, vi, 1872, pp. 478–482.

Anticipatory notices of E. Coues's *Key to North American Birds*, S. F. Baird, T. M. Brewer, and R. Ridgway's *History of North American Birds*, and C. J. Maynard's *Birds of Florida*.

1872. A[LLEN], J. A. Notes on the Natural History of Fort Macon, N. C., and Vicinity. < *Am. Nat.*, vi, 1872, pp. 546–549.

An extended review of E. Coues's paper, *Proc. Acad. Nat. Sci. Phila.*, 1871, pp. 12–49, 120–148.

1872. A[LLEN], J. A. The Birds of the Tres Marias and Socorro Islands. < *Am. Nat.*, vi, 1872, pp. 681, 682.

A review of A. J. Grayson, ed. G. N. Lawrence, *Proc. Boston Soc. Nat. Hist.*, xiv, 1872, pp. 261–303.

1872. A[LLEN], J. A. Birds of Kansas. < *Am. Nat.*, vi, 1872, p. 765.

A favorable notice of the *second edition* of F. H. Snow's *List of Kansas Birds* (8vo, pp. 16, Oct., 1872).

1872. ALLEN, J. A. Notes of an Ornithological Reconnoissance of Portions of Kansas, Colorado, Wyoming, and Utah. < *Bull. Mus. Comp. Zool.*, iii, No. 6, July, 1872, pp. 113–183. (Also sep. pamph.)

After general introductory, the author gives:—1. List of Birds observed at Fort Leavenworth and Topeka, Kansas, spring of 1872 (121 spp.); 2. At Fort Hays, Kansas, May–July, 1871 (61 spp.); 3. In Northwestern Kansas, Dec., 1871, Jan., 1872 (25 spp.); 4. At Cheyenne, Wyoming, Aug., 1871 (41 spp.); 5. In Colorado, July–August, 1871 (81 spp.); 6. In South Park, Colorado, July, 1871 (54 spp.); 7. On Mount Lincoln, Colorado, July, 1871 (36 spp.); 8. Ogden, Utah, Sept.–Oct., 1871 (137 spp.); 9. General Summary or Combination of all the Observations (228 spp.).

1872. ALLEN, J. A.—Continued.

Besides the extended field-notes, there is much critical annotation. The article is very complete, and highly interesting from its bearing on general questions.

1872. ALLEN, J. A. [On Geographical Variation in Mammals and Birds.] < *Proc. Boston Soc. Nat. Hist.*, xv, 1872, pp. 156–159.

1872. ALLEN, J. A. Geographical Variation in North American Birds. < *Proc. Boston Soc. Nat. Hist.*, xv, 1872, pp. 212–219.

In amplification of a previous verbal communication.

1872. [ANON.] Some Western Birds. < *Am. Sportsman*, ii, 1872, pp. 50, 51.

Biographical notices of *Cupidonia cupido*, *Pediœcetes phasianellus*, *Corvus corax*, *Steganopus wilsoni*, and *Grus canadensis*.

1872. B[REWER], T. M., A[LLEN], J. A., *and* SNOW, F. H. Prof. Snow's List of Kansas Birds. < *Am. Nat.*, vi, Aug., 1872, pp. 482–484.

T. M. Brewer's observations on F. H. Snow's *List*, with implied ref. to J. A. Allen's former critique (*tom. cit*, p. 359), J. A. Allen's rejoinder, and the author's addition to his *List* of 45 spp., upon information received from S. F. Baird and J. A. Allen.

1872. BREWSTER, W. Birds new to Massachusetts Fauna. < *Am. Nat.*, vi, 1872, pp. 306, 307.

Of the 6 spp. given, one, *Tringa bairdi*, is new to Massachusetts.

1872. BRUHIN, T. A. Unsere gefiederten Wintergäste. < *Zool. Gart.*, xiii, 1872, pp. 157, 158.

Brief desultory remarks on about 20 spp. of the winter birds of Wisconsin.

1872. BRUHIN, T. A. Zur nordamerikanischen Vogelsprache. < *Zool. Gart.*, xiii, 1872, pp. 187, 188.

Phonetic word-rendering of the notes of some half dozen Wisconsin birds.

1872. BRUHIN, T. A. Ankunft von Vögeln. < *Zool. Gart.*, xiii, 1872, pp. 221, 222.

Unimportant note on 3 spp. of Wisconsin birds.

1872. BURROUGHS, J. Birds' nesting. < *Appletons' Journ.*, viii, July, 1872, p. 41.

1872. COOKE, JOSHUA. Autumn Game on the Prairies. < *Scribner's Monthly*, iv, 1872, pp. 697–705, 7 woodcc.

1872. COPE, E. D. Synopsis of the extinct Batrachia, Reptilia, and Aves of North America. < *Tr. Am. Philos. Soc.*, xiv, pp. 1–250, pll. i–xiv.

Meleagris superbus, p. 239; *Sula loxostyla*, p. 236, spp. nn.

1872. COUES, E. Key | to | North American Birds: | containing a concise account of every species of | living and fossil Bird | at present known from the continent north of the Mexican | and United States Boundary. | Illustrated by 6 steel plates, and upwards of 250 woodcuts. | By | Elliott Coues, | Assistant Surgeon United States Army. | — | Salem: Naturalists' Agency. | New York: Dodd and Mead. | Boston: | Estes and Lauriat. | 1872. 1 vol. imp. 8vo. 4 p. ll., pp. 361 + 1 l., pll. 6, figg. 238. (Pub. Oct., 1872.)

Designed as a manual or text-book of the birds of North America, and claiming to be an exponent of late views on classification and nomenclature. The introductory part gives a general account of the structure, and more particularly the external characters, of birds, with special reference to their classification, and an explanation of the technical terms usually employed in description. An artificial "Key" or analysis of the North American genera follows, prepared upon a plan found practically useful in botany, but seldom applied to zoology, whereby a specimen may be readily referred to its proper place. The body of the work consists of brief diagnoses of the North American species,

1872. COUES, E.—Continued.

with references to a few leading authorities; the families and higher groups being also characterized. The work introduces the first decided changes that were made in the nomenclature of the North American species since 1858, mainly by the recognition as geographical races of a great many previously accredited species. It also contains the first systematic account ever given of the fossil species, prepared under the revision of Prof. O. C. Marsh. The plates illustrate details of external form. The woodcuts, of miscellaneous character, are, with some exceptions, very poorly executed, adding little to the value, and detracting from the general appearance of the work.

Cf. Nature, May 8, 1873; *Saturday Review*, Feb. 22, 1873; *Atlantic Monthly*, ——, 1873; *American Sportsman*, Nov. 22, 1873; *Nation*, Apr. —, 1873; *Portsmouth Journal*, Apr. 26, 1873; *Independent*, Mar. 13, 1873; *Army and Navy Journal*, Nov. 30, 1872, Mar. 15, 1873; *Golden Age*, July 5, 1873, and Sept. 7, 14, 21, 1872; *Literary Bulletin*, Oct. and Nov., 1872; *Am. Nat.*, vi, 1873, pp. 478, 479; *Zool. Rec. for* 1872, p. 33; *Am. Journ. Sci.*, v, 1873, pp. 314, 315; *Pop. Sci. Monthly*, 1873, p. 751; *Turf, Field and Farm*, Mar. 6, 1874; *Forest and Stream*, Jan. 29, 1874, Mar. 12, 26, 1874; *Field and Stream*, Apr. 4, 1874.

1872. FINSCH, O. Zur Ornithologie Nordwest-Amerikas. < *Abhand. Naturw. Ver. Brem.*, iii, 1872, pp. 17–86.

Sehr wichtig; behandelt 113 Arten der Vögel Alaska's, einschliesslich derjenigen von Kittlitz, Baird, Dall und Bannister; nebst Beschreibungen, Messungen, Synonymik und Kritik; auch ein genaues Verzeichniss der nicht publizirten Kupfertafeln Brandt's, die derselbe als eine Fortsetzung zu Pallas' Zoograph. Rosso-As. vorbereitete.

1872. GRAYSON, A. J. On the Physical Geography and Natural History of the Islands of the Tres Marias and of Socorro, off the Western Coast of Mexico. < *Proc. Boston Soc. Nat. Hist.*, xiv, 1872, pp. 261–302.

Edited by G. N. Lawrence. Of birds of Tres Marias, 52 spp., treated with extended field-notes of habits—*Haliplana fuliginosa* var. *crissalis* Baird, MSS., p. 285. Of Socorro Island birds, 14 spp. The article also includes a personal narrative, with much allusion to ornithology. *Cf. Am. Nat.*, vi, 1872, p. 681.

1872. HOLDEN, C. H. Notes on the Birds of Wyoming and Colorado Territories. By C. H. Holden, Jr.; with additional Memoranda by C. E. Aiken. < *Proc. Boston Soc. Nat. Hist.*, xv, 1872, pp. 193–210.

Edited by T. M. Brewer, who neglected to discriminate properly between the two categories of species, or to preserve indications of locality. 142 spp., fully annotated. First appearance of *Junco hyemalis* var. *aikeni*, n. v., p. 201, no descr.

1872. MARSH, O. C. Discovery of a remarkable Fossil Bird [Hesperornis regalis]. < *Am. Journ. Sci.*, iii, 1872, pp. 56, 57.

1872. MARSH, O. C. Notice of some New Tertiary and Post-Tertiary Birds. < *Am. Journ. Sci.*, iv, 1872, pp. 256–262.

Aletornis (g. n.) *nobilis*, *A. pernix*, p. 256; *A. venustus*, p. 257; *A. gracilis*, *A. bellus*, p. 258; *Uintornis* (g. n.) *lucaris*, *Catarractes affinis*, p. 259; *Melcagris altus*, p. 260; *M. celer*, *Grus proavus*, p. 261, spp. nn.

1872. MARSH, O. C. [Ichthyornis dispar.] < *Am. Journ. Sci. and Arts*, 3d ser., iv, p. 344.

1872. MARSH, O. C. Preliminary Description of Hesperornis regalis, with Notices of four other new Species of Cretaceous Birds. < *Am. Journ. Sci.*, iii, 1872, pp. 360–365.

Hesperornis regalis, "g. sp. n." (but already noticed, *tom. cit.*, p. 56), p. 360; *Graculavus* (g. n.) *velox*, p. 363; *G. pumilus*, *G. anceps*, p. 364; *Palæotringa vagans*, p. 365, spp. nn.

1872. MARSH, O. C. Discovery of a remarkable Fossil Bird [Hesperornis regalis]. < *Ann. Mag. Nat. Hist.*, (4), ix, 1872, p. 326.
From *Silliman's Journ.*, Jan., 1872, pp. 56, 57.

1872. MARSH, O. C. Description of Hesperornis regalis, with notices of four other new Species of Cretaceous Birds. < *Ann. Mag. Nat. Hist.*, (4), x, 1872, pp. 212–217.
From *Am. Journ. Sci.*, n. s., iii, May, 1872, pp. 360–365.

1872. MAYNARD, C. J. A Catalogue of the Birds of Coos Co., N. H., and Oxford Co., Me., with annotations relative to the breeding habits, migrations, etc. By C. J Maynard. With Notes by Wm. Brewster. < *Proc. Boston Soc. Nat. Hist.*, xiv, for Oct., 1871, pub. 1872, pp. 356–385.
164 spp., very fully annotated, with field-notes of habits, movements, etc.

1872. REINHARDT, J. Et Tillæg til Grönlands Fuglefauna. < *Notiser Sällsk. pro Fn. et Fl. Fenn. Forh.*, 1872, pp. 132–134.
Pandion haliaëtus, Botaurus stellaris.

1872. REINHARDT, J. Et Tillæg til Grönlands Fuglefauna. < *Vid. Medd.*, 1872, pp. 132–134.
Adds *Pandion haliaëtus* and *Botaurus stellaris*, bringing the number up to 125, inclusive of 56 stragglers.

1872. RIDGWAY, R. New Birds in Southern Illinois. < *Am. Nat.*, vi, 1872, pp. 430, 431.
Vireo belli, Peucæa æstivalis, Cyanospiza ciris, Asturina plagiata, and *Falco mexicanus*—five additions to fauna of the State.

1872. ROSS, A. M. A Classified Catalogue of the Birds of Canada. Toronto. 18. 2. 8vo. pp. 9.
Not seen—said to be a mere list of names.

1872. SNOW, F. H. Catalogue of the Birds of Kansas. <*Kansas Educational Journal* (newspaper—since dead) for April, 1872. Also, a few separate copies, supposed to be perfect reprint, for private distribution, pp. 8, 1872.
An annotated list, defective and replete with typographical errors, of 239 spp., the breeders marked by an asterisk. This, which may be called the first edition, was the one severely criticised by J. A. Allen, and inconsiderately defended by T. M. Brewer, *Am. Nat.*, vi, pp. 359, 482. One good result of the criticism was the almost immediate addition by the author of 45 spp. to the list, in *Am. Nat.*, vi, pp. 484, 485, and the issue of a second edition, as follows:—

1872. SNOW, F. H. A Catalogue | of the | Birds of Kansas | contributed to the | Kansas Academy of Science | by | Frank H. Snow, | Professor of Natural History and Meteorology, in the University | of Kansas, at Lawrence. | — | Second Edition, | October, 1872. | — | Kansas City: | Bulletin Steam Book and Job Printers and Engravers. | 1872. Small 8vo pamph., tinted paper. pp. 16.
282 spp., annotated as in the 1st ed., but with 45 additions and one subtraction, and the serious typographical blunders of the original corrected. This was the original shape of the 2d ed., published independently by the author; it was immediately communicated to the Kansas Academy of Science, and reprinted in the *Transactions* of that body. See 1873, SNOW, F. H.

1872. TRIPPE, T. M. Birds Found Breeding in the Catskill Mountains. <*Am. Nat.*, vi, 1872, pp. 47, 48.
7 spp. of *Oscines*, with a note on *Petrochelidon lunifrons*.

1872–73. RIDGWAY, R. On the relation between Color and Geographical Distribution in Birds, as illustrated in Melanism and Hyperchromism. <*Am. Journ. Sci.*, iv, Dec., 1872, pp. 454–460; v, Jan., 1873, pp. 39–44.

Myiodioctes pusillus var. *pileolata*, p. 457; *Helminthophaga celata* var. *lutescens*, p. 457; *Geothlypis poliocephala* var. *caninucha*, p. 459; *Cardinalis virginianus* var. *coccineus* (descr. nulla), p. 39; *Cyanura stelleri* var. *frontalis*, p. 43, nn. varr. *Cf.* COUES, *Am. Nat.*, vii, July, 1873, pp. 415–418; RIDGWAY, *Am. Nat.*, vii, Sept., 1873, pp. 548–555.

1872–78. MAYNARD, C. J. The | Birds of Florida: | containing | original descriptions of upwards of Two hundred and fifty species, | with notes on their habits, etc., | by C. J. Maynard. | With five [mut.] plates drawn and colored from nature. | By Helen S. Farley. | — | Part One [mut. mut.]. | — | Salem: | Naturalists Agency [mut. mut.]. | 1872 [–1878]. 4to. Part One, 1872, pp. 1–32, pl. i. Part Two, 1873, pp. 33–64. Part Three, Ipswich, Mass., C. J. Maynard, 1874, pp. 65–88, pl. ii. Part Four, title changed to The | Birds | of | Florida | with the | Water and Game | Birds | of | Eastern North America, | by C. J. Maynard. | — | Illustrated. | C. A. Walker, Boston. | — | C. J. Maynard & Co., | Newtonville, Mass. | 1878. pp. 89–112, pl. [iii]; pub. May, 1878. Part Five, July, 1878, pp. 113–136, pll. iv, v. Part Six, Sept., 1878, pp. 137– —, pl. vi.

A prospectus, issued in 1872, contained 8 pp. of letter-press on *Rostrhamus sociabilis*, with pl. i of same. New prospectus with Part Four, 1878.—Pl. ii, *Phonipara zena*; pl. [iii], *Passerculus princeps*; pl. iv, *Pipilo leucopsis* (= *P. alleni* Coues); pl. v, *Ammodromus melanoleucus* (= *A. maritimus* var. *nigrescens* Ridgw.); pl. vi, 23 figs. of anatomical and other details; pl. vii, 66 figs. of eggs.

Publication continues; a later prospectus, issued with Part Four when the work was resumed, announces completion in 15 parts, of about 400 pp.; permanent title may differ from each of the above cover-titles. The above six parts carry the subject nearly through *Oscines*—into *Corvidæ*. The work is a systematic treatise, thus far with brief technic, partly anatomical, and much new and interesting biography from original investigations.

1873. ADAMS, A. L. Field and Forest Rambles, with Notes and Observations on the Natural History of Eastern Canada. London, 1873. 8vo. pp. 333.

Not seen—said to contain an account of the birds of New Brunswick, a list of which is given in the Appendix, pp. 296–302.

1873. AIKEN, C. E. A Glimpse at Colorado and its Birds. <*Am. Nat.*, vii, 1873, pp. 13–16.

Field-notes on a few species of *Oscines*.

1873. A[LLEN], J. A. The Birds of Florida. < *Am. Nat.*, vii, 1873, pp. 165, 166.

A review of Part I of C. J. Maynard's work of that name (4to, Salem, 1872).

1873. A[LLEN], J. A. A Text Book of North American Ornithology. < *Am. Nat.*, vii, 1873, pp. 308, 309.

A review of E. COUES's *Key to North American Birds*.

1873. [ANON.] Taming Birds. <*Am. Sportsman*, ii, 1873, p. 59.

Note of a lady in Florida taming the wild birds about her house.

1873. [ANON.] The Birds of April. <*Am. Sportsman*, ii, 1873, p. 104.

Quoted from *The Atlantic Monthly*.

1873. [ANON.] The Importation of Foreign Birds. <*Am. Sportsman*, ii, 1873, p. 137.

1873. [ANON.] "Key to North American Birds." <*Am. Sportsman*, iii, 1873, p. 113, fig. 1.

Being a review of E. COUES's *Key to North American Birds*.

1873. [ANON.] Rail or Ortolan. < *Am. Sportsman*, iii, 1873, p. 141.

Dolichonyx oryzivorus and *Porzana carolina* known as "Ortolans", but shown to be distinct from the true Ortolan (*Emberiza hortulana*).

1873. [ANON.] [Birds of Florida.] < *Am. Sportsman*, iii, 1873, p. 165; see, also, iv, 1874, p. 41.

Advance notice of C. J. MAYNARD'S *Birds of Florida*.

1873. [ANON.] The Birds of Florida. < *Forest and Stream*, i, Oct. 16, 1873, p. 158.

Review of first two parts of *The Birds of Florida*, by C. J. Maynard.

1873. [ANON.] [Instances of albinism.] < *Forest and Stream*, i, Dec. 4, 1873, p. 263.

1873. [ANON.—HALLOCK, C.] Migrations of Birds and the Telegraph. < *Forest and Stream*, i, Dec. 24, 1873, p. 312.

1873. [ANON.] Introduction of European Birds in the United States for Economic Purposes. < *Zoologist*, 2d ser., viii, 1873, p. 3696.

From *Nature*, Aug. 14, 1873.

1873. BAIRD, S. F., *and* RIDGWAY, R. On some new Forms of American Birds. < *Bull. Essex Inst.*, v, No. 12, Dec., 1873, pp. 197–201.

"Continued from the October number of the *American Naturalist*, vii, 1873." We have here the original preliminary notices, published to secure priority, of various spp. ostensibly described as new in the *History of North American Birds*, which appeared very shortly afterward. The paper was prepared by the junior author, and the following new names are his, with three exceptions:—*Leucosticte tephrocotis* var. *australis* Allen, *Ammodromus maritimus* var. *nigrescens*, *Zonotrichia leucophrys* var. *intermedia*, *Poospiza belli* var. *nevadensis*, *Dolichonyx oryzivorus* var. *albinucha*, p. 198; *Perisoreus canadensis* var. *capitalis* Bd., *P. canadensis* var. *obscurus*, *Cyanocitta ultramarina* var. *arizonæ*, *C. floridana* var. *sumichrasti*, *Canace obscura* var. *fuliginosa*, *Cupidonia cupido* var. *pallidicincta*, p. 199; *Strix flammea* var. *guatemalæ*, *Syrnium nebulosum* var. *sartorii*, *Scops asio* var. *floridanus*, *S. asio* var. *enano* LAWR., MS., p. 200; *Falco communis* var. *pealei*, *F. columbarius* var. *suckleyi*, p. 201.—See 1873, RIDGWAY, R.

1873. BATTY, J. H. The U. S. Geological Survey. < *Forest and Stream*, i, Aug. 28, 1873, p. 35.

Some rare birds of Colorado.

1873. BREWER, T. M. The Avifauna of Colorado. < *Am. Nat.*, vii, 1873, pp. 631, 632.

Reply to E. Coues's criticism of his editorship of the paper on this subject, *Proc. Bost. Soc.*, xv, 1872, pp. 193–210.—See 1872, HOLDEN, C. H.

1873. BREWER, T. M. Description of some Nests and Eggs of Arizona Birds. < *Proc. Bost. Soc. Nat. Hist.*, xvi, 1873, pp. 106–111.

From Lieut. C. Bendire's collection. 14 spp., several described for the first time. For "Myiadestes townsendii" read *Phænopepla nitens*; for "Carpodacus cassinii" read *C. frontalis*. *Cf.* COUES, *Am. Nat.*, viii, Sept., 1874, p. 542.

1873. BRUHIN, T. A. Zoologische Mittheilungen aus Wisconsin. < *Zool. Gart.*, xiv, 1875, pp. 431, 432.

Mentions a very few birds.

1873. COUES, E. A | Check List | of | North American Birds. | — | By | Elliott Coues. | — | Salem. | Naturalists' Agency. | 1873. 8vo pamph. 2 p. ll., pp. 1–137 + 2 ll.

The body of the list was printed, and some early copies were distributed, in Dec., 1873; but its full publication was held over until 1874, to insert in an ap-

1873. COUES, E.—Continued.

pendix some species then about being published. It is issued in two forms; one, as separate pamphlet, with title as above; the other, as forming the latter half, separately paged, of the same author's *Field Ornithology* (1874). The species are numbered consecutively from 1 to 635, the numerous "varieties" not being numbered, excepting when a variety is the only North American representative of a species. The fossil spp. are 29 in number. The List contains a very few species discovered since the author's *Key to North American Birds* was published; otherwise, the arrangement and nomenclature are identical with those of that work. Various additions and corrections, however, are given in the appendix. The names are printed only on one side of the page, to leave room for MS. notes and in order that the *List* may be cut up for labelling purposes if desired.

1873. COUES, E. Report | on the | Prybilov Group, or Seal Islands, of Alaska. | By | Henry W. Elliott, | Assistant Agent Treasury Department. | — | Washington: | Government Printing Office. | 1873. 1 vol. oblong 4to (bound to open portfolio-wise, size of type-bed $5\frac{1}{4} \times 8\frac{3}{4}$ inches), not paged, 48 full-page photographic illustrations, 2 woodcc. > Appendix. Ornithology of the Prybilov Islands. By Dr. Elliott Coues, U. S. A.

The ornithological portion, based on Mr. Elliott's MSS. and collections, consists of a formal treatise on the birds of the island, with considerable synonymy and other technicality, but with special reference to the habits of the species. *Tringa ptilocnemis* (nota, sub T. "crassirostris"), sp. n. The article is literally reprinted in Elliott's "A Report upon the Condition of Affairs in the Territory of Alaska" (8vo, Washington, 1875). A digest of the zoological matter, including the ornithology, with some extraneous matter, was published by J. E. Harting (8vo, London, 1874, from letters to *The Field* newspaper). The original edition is very scarce, fetching $50 to $75. The impression was of only 125 copies, "75 to the Secretary of the Treasury, 50 to the Library of Congress," and the types were distributed without stereotyping. The work was never in the trade, the few copies purchasable mainly coming from a very particular source. The 8vo reprint of the ornithology is the same as the original, e. & o. e.

1873. C[OUES], E. New England Ornithology. < *Am. Nat.*, vii, 1873, pp. 42, 43.

A review of C. J. Maynard's paper, *Proc. Boston Soc. Nat. Hist.*, xiv, 1872, pp. 356–385, *q. v.*

1873. C[OUES], E. Ornithology of the West. < *Am. Nat.*, vii, 1873, pp. 221–223.

A review of J. A. Allen's paper, *Bull. Mus. Comp. Zool.*, iii, 1872, pp. 113–183.

1873. COUES, E. Some United States Birds, New to Science, and other Things Ornithological. < *Am. Nat.*, vii, 1873, pp. 321–331, figg. 65–70.

Based on MSS. and collections of C. Bendire. *Peucæa carpalis*, p. 322; *Harporhynchus bendirei*, p. 330, spp. nn., with field-notes on a dozen or more species, and a sketch of the genus *Harporhynchus*, with figg. of heads of 6 spp.

1873. C[OUES], E. New Avian Subclass [Odontornithes]. < *Am. Nat.*, vii, 1873, p. 364.

Cf. MARSH, *tom. cit.*, 115; *Am. Journ. Sci., Feb.*, 1873.

1873. C[OUES], E. Color-variation in Birds Dependent upon Climatic Influences. < *Am. Nat.*, vii, July, 1873, pp. 415–418.

A criticism of R. Ridgway's paper on this subject, *Am. Journ. Sci.*, iv, 1872, pp. 454–460, and v, 1873, pp. 39–44, *q. v.*

1873. C[OUES], E. Late Local Lists. <*Am. Nat.*, vii, 1873, pp. 418–421.
Reviews of W. H. Dall, *Proc. Cala. Acad.*, Feb, 1873; and of C. J. Holden, Jr., and C. E. Aiken, ed. T. M. Brewer, *Proc. Boston Soc.*, xv, 1872, p. 193, and of W. D. Scott, *ibid.*, p. 219.

1873. COUES, E. Notes on Two little-known Birds of the United States. <*Am. Nat.*, vii, Nov., 1873, pp. 695–697.
Field observations on *Centronyx bairdi* and *Neocorys spraguii*.

1873. COUES, E. Specimens of Bird Architecture. <*Am. Sportsman*, iii, 1873, pp. 129, 245, 313; iv, p. 19.
Nests of *Icterus baltimore*, *Cinclus mexicanus*, *Chætura pelasgia*, and the group of burrow-nesters.

1873. DALL, W. H. Notes on the Avifauna of the Aleutian Islands, from Unalashka Eastward. <*Proc. California Acad. Nat. Sci.*, v, April, 1873 (pub. in advance separately with different pagination, Feb., 1873), pp. 25–35.
Field-notes on 54 spp., chiefly water birds. See 1874, DALL, W. H.

1873. EDITORS. The Game Birds of the Northwest [United States]. <*Am. Nat.*, vii, 1873, pp. 314, 315.
Notice of a circular on this subject distributed by E. Coues to officers of the U. S. Army, calling for information.

1873. FINSCH, O. [Reisebericht über Nord-Amerika.] <*J. f. O.*, 1873, pp. 458–460.

1873. GENTRY, T. G. [On the molestation of certain Birds by Sciurus hudsonius.] <*Proc. Acad. Nat. Sci. Phila.*, xxv, 1873, pp. 101, 102.

1873. HERRICK, HAROLD. A partial Catalogue of the Birds of Grand Menan, N. B. <*Bull. Essex Inst.*, v, No. 2, Mar., 1873, pp. 28–41.
194 spp., fully annotated.

1873. LOCKWOOD, S. Our native Birds [*i. e.* of the United States] acquiring new habits. <*Pop. Sci. Monthly*, Mar., 1873, p. 633.

1873. MARSH, O. C. Notice of a new Species of Ichthyornis [I. celer]. <*Am. Journ. Sci.*, v, 1873, p. 74.
Afterward made the basis of the genus *Apatornis*.

1873. MARSH, O. C. On a New Subclass of Fossil Birds (Odontornithes). <*Am. Journ. Sci.*, v, 1873, App., pp. 161–163.
Based on *Ichthyornis dispar*. The former *Ichthyornis celer* of Marsh is made the type of a new genus, *Apatornis*, p. 162.

1873. MARSH, O. C. Fossil Birds from the Cretaceous of North America. <*Am. Journ. Sci.*, v, 1873, pp. 229, 230.
List from COUES'S *Key to N. Am. Birds*, with additions to date, 13 spp. *Graculavus agilis*, p. 230, sp. n.

1873. MARSH, O. C. Notice of a New and Remarkable Fossil Bird [Ichthyornis dispar]. <*Am. Nat.*, vii, 1873, p. 50.
Editorial extract from *Am. Journ. Sci.*

1873. MARSH, O. C. On a New Sub-class of Fossil Birds (Odontornithes). <*Am. Nat.*, vii, 1873, pp. 115–117.
Reprinted from *Am. Journ. Sci.* for Feb., 1873, pp. 161–163.

1873. MAYNARD, C. J. The Strange and Rare Birds of North America. <*Am. Sportsman*, ii, 1873, p. 155; iii, 1873, pp. 10, 36, 66, 115.
Plotus anhinga, *Sula bassana*, *Utamania torda*, *Tachypetes aquilus*, *Uria troile*, *Larus tridactylus*.

1873. MERRIAM, C. H. Report on the Mammals and Birds of the Expedition [Hayden's, of 1872, which surveyed portions of Montana, Idaho, Wyoming, and Utah]. < *Sixth Annual Rep. U. S. Geological Survey of the Territories for* 1872, 1873, pp. 661–715.

Birds at pp. 670–715. A systematic list of the species, with tables of specimens procured, annotated extensively with field-notes, to p. 704. Follows a similar article on the nests and eggs collected, to p. 712. Succeeded by separate nominal lists of species found in Idaho and Wyoming respectively, pp. 712, 713. Concluded with a compiled nominal list of all the species known to occur in Utah, 176 in number. The determinations are understood to have been made under Smithsonian supervision.

1873. MONTEBELLO, G. DE. Sur quelques animaux de l'Amérique du Nord. Extrait d'une lettre adressée à M. A. Geoffroy Saint-Hilaire. < *Bull. Soc. Acclim.*, 2e sér., x, 1873, pp. 381–384.

Traite presque entièrement de divers Oiseaux, Tetrao cupido, T. umbellus, Meleagris, Ortyx, quelques échassiers et canards.

1873. N[EWCOMB], R. L. [Rare birds on the Massachusetts coast.] < *Forest and Stream*, i, Dec. 11, 1873, p. 278.

1873. PURDIE, H. A. Notes on some of the Rarer Birds of Massachusetts. < *Am. Nat.*, vii, 1873, pp. 692, 693.

Mention of about 25 spp.

1873. RIDGWAY, R. The Prairie Birds of Southern Illinois. < *Am. Nat.*, vii, 1873, pp. 195–203.

95 spp. observed in two visits; about 140, of which 25 are water birds, breed in the locality.

1873. RIDGWAY, R. The Relation between the Color and the Geographical Distribution of Birds. < *Am. Nat.*, vii, Sept., 1873, pp. 548–555.

Chiefly controversial, being a rejoinder to E. Coues's criticism, *op. cit.*, pp. 415–418, of the paper in *Am. Jour. Sci.*, iv, 1872, pp. 454–460; v, Jan., 1873, pp. 39–44, *q. v.*

1873. RIDGWAY, R. On some New Forms of [chiefly North] American Birds. < *Am. Nat.*, vii, Oct., 1873, pp. 602–619.

Catherpes mexicanus var. *conspersus*, p. 603; *Helminthophaga celata* var. *lutescens*, p. 606; *Dendroica vieillotii* var. *bryanti*, p. 606; *Dendroica dominica* var. *albilora* "Baird", p. 606; *Dendroica graciæ* var. *decora*, p. 608; *Myiodioctes pusillus* var. *pileolata* (*ex* Pallas), p. 608; *Collurio ludovicianus* var. *robustus* "Baird" [= *elegans* Bd., *nec* Sw.], p. 609; *Certhiola newtoni* "Baird", p. 611; *C. caboti*, *C. barbadensis*, *C. frontalis* Baird, p. 612; *Junco aikeni*, p. 613 [in type before, but not described, from Ridgway's MSS., *Pr. Bost. Soc.*, xv, 1872, p. 201]; *Peucæa æstivalis* var. *arizonæ*, p. 616, are the new species or varieties. Analytical synopses of *Certhiola*, *Junco*, and *Cardinalis* are introduced, the former being by S. F. Baird. —These novelties are those then about to appear in the *Hist. N. A. Birds*, the notices being anticipatory, to secure priority; the article is virtually continued in *Bull. Essex Inst.*, v, Dec., 1873, pp. 197–201. See 1873, BAIRD, S. F., *and* RIDGWAY, R.

1873. RIDGWAY, R. Notes on the Bird-fauna of the Salt Lake Valley and the adjacent portions of the Wahsatch Mountains. < *Bull. Essex Inst.*, v, No. 11, Nov., 1873, pp. 168–173.

Based on the same material that was afterward fully elaborated in Clarence King's Report of the Survey of the Fortieth Parallel. See 1877, same author.

1873. RIDGWAY, R. The Birds of Colorado. < *Bull. Essex Inst.*, v, No. 11, Nov., 1873, pp. 174–195.

An elaborate paper, giving a *résumé* of our present knowledge. 1. Eastern species found in Colorado, 30. 2. Others found at more western points, not yet

1873. RIDGWAY, R.—Continued.
detected in Colorado, 15. 3. Species of the southern border of the United States found in Colorado, 10. Western species found in Colorado not occurring in corresponding latitudes in the Great Basin, 5. Complete catalogue of Colorado birds, distinguishing the breeders, and indicating their range in the breeding season, 243 spp. Critical notes on sundry spp., pp. 189–195.

1873. RIDGWAY, R. The grouse and quails of North America. Discussed in relation to their variation with habitat. < *Forest and Stream*, i, Dec. 18, 1873, p. 289.

1873. RIDGWAY, R. The Relation between the Colour and Geographical Distribution of Birds. < *Zoologist*, 2d ser., viii, 1873, pp. 3790–3797.
Reprinted from the *American Naturalist*, Sept., 1873, pp. 548–555, *q. v.*

1873. SCOTT, W. D. Partial List of the Summer Birds of Kanawha County, West Virginia; with Annotations. < *Proc. Boston Soc. Nat. Hist.*, xv, 1873, pp. 219–227.
86 species.

1873. "SNAP SHOT." Quail vs. Partridge—Esquimaux Curlew. < *Am. Sportsman*, iii, 1873, p. 11. See, also, p. 106.
Inquiries concerning proper name of *Ortyx virginiana*, answered by Prof. S. F. Baird.—*Numenius borealis* breeds in Wyoming.

1873. SNOW, F. H. Harlan's Hawk and the Mexican Cormorant. < *Am. Nat.*, vii, 1873, pp. 172, 173.
The birds named Harlan's Hawk and Florida Cormorant in his catalogue of Kansas birds prove, upon examination by S. F. Baird, to be *Buteo harlani* indeed, but *Graculus mexicanus* instead of *G. floridanus*.

1873. SNOW, F. H. Catalogue of the Birds of Kansas. < *Trans. Kansas State Board of Agriculture* (comprising *Trans. Kans. Acad. Sci.*) *for* 1872, April, 1873, pp. 375–386. Also, a few separate oversheets, repaged, pp. 12.
The only change from the previous "second edition" (of which this is a reprint) is at No. 41, by insertion of *Colaptes mexicanus*; *C. hybridus*, No. 41 of 2d ed., being reduced to No. 40*a*. 282 spp.; to this state of the list additions were made in 1874, *q. v.*

1873. TRIPPE, T. M. The Irregular Migrations of Birds. < *Am. Nat.*, vii, 1873, pp. 389–394.
On some of the causes of disturbances in the movements of birds, with reference to North American spp.

1873. TRIPPE, T. M. Ornithological Queries. < *Am. Nat.*, vii, 1873, p. 498.
Asks for information on the geographical distribution of 9 N. Am. birds.

1873. TRIPPE, T. M. Notes on the Birds of Southern Iowa. < *Proc. Boston Soc. Nat. Hist.*, xv, 1873, pp. 229–242.
162 spp., annotated with many interesting observations.

1873. VERRILL, A. E. Key to North American Birds. . . . By Dr. Elliott Coues, U. S. A. < *Am. Journ. Sci.*, v, 1873, pp. 314, 315.
Review of the work of that name.

1873. "VETERAN." Our Game Birds. < *Am. Sportsman*, ii, 1873, p. 170 (see, also, iii, 1873, p. 11); iii, 1873, pp. 6, 124, 326.
On *Numenius borealis*, *Charadrius marmoratus* (i. e. *C. fulvus* var. *virginicus*), *Meleagris gallopavo*, *Cygnus buccinator*, etc.

1874. "ALASKA." [H. W. ELLIOTT.] A Ton of Bird's Eggs Picked up in an Hour. < *Am. Sportsman*, iv, 1874, p. 170.

Visit to the breeding grounds of *Laridæ*, *Graculidæ*, etc., along the shores of Behring's Strait.

1874. ALLEN, J. A. Laws of Geographical Variation in North American Mammals and Birds. < *Am. Nat.*, viii, 1874, pp. 227–229.

Chiefly controversial, with reference to E. Coues, *op. cit.*, July, 1873, pp. 415–418, and R. Ridgway, *ibid.*, Sept., 1873, pp. 548–555.

1874. ALLEN, J. A. Geographical Variation in North American Birds. < *Am. Nat.*, viii, 1874, pp. 534–541.

Reprinted from *Proc. Bost. Soc. Nat. Hist.*, xv, 1872, pp. 212–219.

1874. ALLEN, J. A. Notes on the Natural History of Portions of Dakota and Montana Territories, being the substance of a Report to the Secretary of War on the Collections made by the North Pacific Railroad expedition of 1873, Gen. D. S. Stanley, Commander. < *Proc. Bost. Soc. Nat. Hist.*, xvii, 1874, pp. 33–86. Also separately published, 8vo, Boston, 1874, pp. 1–61.

III, Report on the Birds, pp. 44–68. 118 spp., fully annotated; the list preceded by general considerations of the avifauna of the region, and several partial local lists. An important contribution. *Cf. Zool. Rec. for* 1874, p. 31.

1874. A[LLEN], J. A. Field Ornithology. < *Am Nat.*, viii, 1874, pp. 418–420.

A review of E. Coues's work of that name (8vo, Salem, 1874).

1874. [ANON.] [Birds of North America.] < *Am. Sportsman*, iii, 1874, pp. 229, 265.

Notices of first four parts of *Birds of North America*, by Theodore Jasper. The second notice expresses opinions diametrically opposed to those of the first.

1874. [ANON.] [A History of North American Birds.] < *Am. Sportsman*, iii, 1873–74, p. 349. See, also, p. 412.

Being a review of *A History of North American Birds*, by Baird, Brewer, and Ridgway, 4to, vols. I–III, Boston, 1874.

1874. [ANON.] [Field Ornithology.] < *Am. Sportsman*, iv, 1874, p. 25.

Review of Dr. Elliott Coues's *Field Ornithology*, 8vo, Salem, 1874.

1874. [ANON.] [Review of] An Annotated History of the Birds of Utah. By H. W. Henshaw. < *Am. Sportsman*, iv, 1874, p. 235.

1874. [ANON.] [Painstaking persistence of Audubon.] < *Am. Sportsman*, iv, 1874, p. 394.

Anecdote copied from Trenton (N. J.) *State Gazette*.

1874. [ANON.] American Wild-fowl Shooting, [etc.] < *Am. Sportsman*, v, Nov. 7, 1874, p. 89.

Review of *American Wild-fowl Shooting*, by Joseph W. Long, New York, 1874, 12mo, pp. 285.

1874. [ANON.] [Food of various insectivorous birds, with remarks on the utility of Turdus migratorius and Corvus americanus.] < *Am. Sportsman*, v, Nov. 21, 1874, p. 124.

1874. [ANON.] A new work on Ornithology. < *Am. Sportsman*, v, Dec. 5, 1874, p. 145.

Preliminary notice of COUES's *Birds of the Northwest*.

1874. [ANON.] The Birds of North America. < *Forest and Stream*, i, Jan. 1, 1874, p. 333. See, also, p. 348.

Review of *The Birds of North America*, by Theodore Jasper.

1874. [ANON.] Key to North American Birds, [etc.] < *Forest and Stream*, i, Jan. 29, 1874, p. 398.

Review of *Key to North American Birds*, by Dr. Elliott Coues, 8vo, Salem, 1873.

1874. [ANON.] Field Ornithology. < *Forest and Stream*, ii, April 9, 1874, p. 141.

Review of *Field Ornithology, a Manual*, etc., by Dr. Elliott Coues, 8vo, Salem, 1874.

1874. [ANON.] History of North American Birds. < *Forest and Stream*, ii, April 30, 1874, p. 179.

Review of vol. III of the *History of North American Birds*, by S. F. Baird, R. Ridgway, and T. M. Brewer.

1874. [ANON.] The Introduction of Singing Birds into the Country [*i. e.*, the United States]. < *Forest and Stream*, ii, June 4, 1874, p. 264.

Account of labors of Cincinnati (Ohio) Acclimation Society.

1874. [ANON.] Field Ornithology. < *Forest and Stream*, ii, July 2, 1874, p. 332.

Review of *Field Ornithology*, by Elliott Coues, 8vo, Salem, 1874.

1874. [ANON.] An Annotated List of the Birds of Utah. < *Forest and Stream*, ii, July 30, 1874, p. 387.

Review of pamphlet (title as above), by H. W. Henshaw, 8vo, Salem, 1874.

1874. [ANON.] Les Oiseaux Insectivores. < *Naturaliste Canad.*, vi, 1874, pp. 205–214, 250–253.

1874. BAIRD, S. F., BREWER, T. M., *and* RIDGWAY, R. A | History | of | North American Birds | by | S. F. Baird, T. M. Brewer, and R. Ridgway | Land Birds | Illustrated by 64 colored plates and 593 woodcuts | Volume I[–III]. | [Vignette.] | Boston | Little, Brown, and Company | 1874 3 vols. sm. 4to. Vol. I, pp. i–xxviii, 1–596, i–vi, cuts, and pll. i–xxvi. Vol. II, 3 p. ll., pp. 1–590, i–vi, cuts, and pll. xxvii–lvi. Vol. III, 3 p. ll., pp. 1–560, 1 l., i–xxviii, cuts, and pll. lvii–lxiv.

The whole dates 1874, and appeared about December of that year. The work has not been completed by the vol. or vols. on the Water Birds. It is issued with plain or colored plates; in some copies, the woodcuts in text are also colored. A considerable portion of the woodcuts are the same as those of Baird ed. Cooper's Ornithology of California, for which they were originally prepared; most of the rest are original; but some, drawn by Wolf and engraved by Whymper, first published in "British Birds and their Haunts", were furnished by the London Soc. for Diff. Christian Knowledge; and others, prepared for an ined. work on the birds of Germany, by Blasius, were obtained from Messrs. Vieweg & Sohn of Braunschweig. Nearly all the drawings of the full-length figures were made on wood by E. L. Sheppard of Philadelphia, while the heads were executed mostly by H. W. Elliott and R. Ridgway; both series were engraved by H. H. Nichols of Washington. The generic outlines (cuts in text) were drawn by A. L. Schönborn and engraved by the Jewett process. "The technical or descriptive matter of the present work has been prepared by Messrs. Baird and Ridgway, that relating to the *Raptores* entirely by Mr. Ridgway; and all the accounts of the habits of the species are from the pen of Dr. Brewer. In addition to the matter supplied by these gentlemen, Professor Theodore N. Gill has furnished that portion of the Introduction defining the class of Birds as compared with other vertebrates; while to Dr. Coues is to be given the entire credit for

1874. BAIRD, S. F., BREWER, T. M., *and* RIDGWAY, R.—Continued.

the pages embracing the tables of Orders and Families, as well as for the Glossary beginning on page 535 of Vol. III."—(*Extract from Preface.*)

For the biographies of the species, the most productive source of information "has been the great amount of manuscript contained in the archives of the Smithsonian Institution in the form of correspondence, elaborate reports, and the field notes of collectors and travellers, the use of which for the present work, has been liberally allowed by Professor Henry. By far the most important of these consist of notes made by the late Robert Kennicott in British America, and received from him and other gentlemen in the Hudson Bay Territory, who were brought into intimate relationship with the Smithsonian Institution through Mr. Kennicott's efforts. . . . Equally serviceable has been the information received from the region of the Yukon River and Alaska generally, including the Aleutian Islands, . . ."—(*Preface.*) In elaborating these materials, Dr. Brewer further supplements his own knowledge with information derived from the published notes of the naturalists of the Pacific Railroad and other Western Surveys, and from the general literature of the subject, with less thorough digestion of these materials than might be desired.

It has apparently been deemed advisable, in a work of this character, to reduce the synonymatic and bibliographical matter to its lowest terms.

The technical matter (diagnostic and descriptive) is based, and for the most part derived, from BAIRD'S *B. N. A.*, 1858, and *Review*, 1864–66; the specific characters, etc., being often directly transferred from those works to the present, with such addition or modification as might be required. To this statement is to be excepted the whole of Mr. Ridgway's extensive monograph of the *Raptores*, and Prof. Baird's article on *Certhiola*, which latter apparently represents a before unpublished continuation of his *Review;* with the further and principal exception of Mr. Ridgway's numerous elaborate analytical tables, which include, as a rule, not only the N. Am. species, but also their Cent. and S. Am. allies.

The classification and general arrangement accord in the main with those previously used by Baird; but the nomenclature and details of the handling of the birds are very different, numerous reputed species being reduced to "varieties", according to the prevalent views of what is sometimes called in England the "American School". The result in this regard agrees more closely with that exhibited in the present writer's *Key* of 1872, *Checklist* of 1873, and *B. N. W.* of 1874. In addition to the various novel combinations of generic, specific, and varietal terms resulting from this, the following species or varieties are named as new; but most of them were actually published previously by Mr. Ridgway in the *Amer. Nat.*, vii, 1873, pp. 602–619, and *Bull. Essex Inst.*, v, 1873, pp. 197–201, *qq. vv.*:—

Vol. I.—*Harporhynchus curvirostris* var. *palmeri* R., p. 36; *Oatherpes mexicanus* var. *conspersus* R., p. 138; *Helminthophaga ruficapilla* varr. *ocularis* and *gutturalis* R., p. 191; *H. celata* varr. *lutescens* and *obscura* R., p. 192; *Dendroica vieilloti* var. *bryanti* R., p. 218; *D. dominica* var. *albilora* R., p. 220; *D. graciæ* var. *decora* R., p. 220; *Geothlypis poliocephala* var. *caninucha* R., p. 296; *Vireosylvia calidris* var. *barbadense* R., p. 359; *V. magister* B., p. 359; *Collurio ludovicianus* var. *robustus* B., p. 413 (= *elegans* Bd., 1858–66); *Certhiola caboti, C. newtoni* B., p. 427; *C. barbadensis frontalis* B., p. 428; *Hesperiphona vespertina* var. *montana* R., p. 449; *Coturniculus passerinus* var. *perpallidus* R., p. 549; *Junco hyemalis* var. *aikeni* R., p. 579 (first published by Aiken in *Pr. Bost. Soc.*, 1872); *Poospiza belli* var. *nevadensis* R., p. 590.

Vol. II.—*Melospiza melodia* var. *mexicana* R., p. 18; *Peucæa æstivalis* var. *arizonæ* R., p. 38; *Hedymeles melanocephalus* var. *capitalis* R., p. 70; *Cardinalis virginianus* var. *coccineus* R., p. 99; *Cyanurus stelleri* var. *frontalis* R., p. 272; *Cyanocitta californica* var. *sumichrasti* R., p. 283; *C. ultramarina* var. *sordida* R., p. 284; *Perisoreus canadensis* var. *obscurus* R., p. 298; var. *capitalis* B., p. 298; *Empidonax brunneus* R., p. 363 (= *Empidochanes fuscus*); *E. axillaris* R., p. 363 (= *Empid. albigularis* Scl.); *Melanerpes formicivorus* var. *striatipectus* R., p. 561.

Vol. III.—*Strix flammea* var. *guatemalæ* R., p. 11; *Syrnum nebulosum* var. *sartorii* R., p. 29; *Scops asio* var. *floridanus* R., p. 48; *S. asio* var. *enano* Lawr.,

1874. BAIRD, S. F., BREWER, T. M., *and* RIDGWAY, R.—Continued.

MSS., p. 48; *Spheotyto* (*sic*) *cunicularia* var. *guadeloupensis* R., p. 90; *Antenor* R., g. n., p. 105; *Rhynchofalco* R., g. n., p. 107; *Falco communis* var. *pealei* R., p. 129; *F. lithofalco* var. *suckleyi* R., p. 143; "*Parabuteo*" (= *Antenor*) R., p. 250; *Pseudogryphus, Rhinogryphus*, gg. nn., R., p. 337; *Dendragapus obscurus* var. *fuliginosus* R., p. 421; *Cupidonia cupido* var. *pallidicinctus* R., p. 440. Appendix I, "Additions and Corrections," reviews the matter of all three vols. *Zonotrichia leucophrys* var. *intermedia* R., p. 514. Appendix II, Explanation of terms used in describing the external form of birds (after Sundevall).—Glossary of technical terms used in descriptive ornithology (by Coues).—Indexes.

1874. "BOONE." [JOSHUA COOKE.] An April Morning on the Prairie. < *Am. Sportsman*, iv, 1874, p. 131.

1874. BREWSTER, W. Some Observations on the Birds of Ritchie County, West Virginia. < *Ann. Lyc. Nat. Hist. N. Y.*, xi, 1874, pp. 129–146.

100 spp., well annotated, with field-notes, in some cases amounting to biographical sketches. *Cf.* COUES, *Am. Nat.*, ix, 1875, p. 570, 571.

1874. COOK, A. J. Birds and Caterpillars. < *Am. Nat.*, viii, 1874, p. 368.

Coccyzus erythrophthalmus, Turdus migratorius, Cyanura cristata, what larvæ they respectively devour.

1874. COUES, E. Department of the Interior. | United States Geological Survey of the Territories. | F. V. Hayden, U. S. Geologist-in-Charge. | — | Miscellaneous Publications—No. 3. | — | Birds of the Northwest: | A Hand-book | of | The Ornithology | of the | Region drained by the Missouri River | and its Tributaries. | — | By Elliott Coues, Captain and Assistant Surgeon U. S. Army. | — | Washington: | Government Printing Office. | 1874. 1 vol. 8vo. pp. xii, 791.

A general account, chiefly biographical, in greater or less detail, of about 450 spp. of the Missouri region, and various others, being a large majority of North American birds; with special reference to geographical distribution, very extensive synonymatic tables, and lists of specimens collected on various expeditions to which F. V. Hayden was attached, or of which he was in charge. The matter is sufficiently miscellaneous to partake somewhat of an encyclopædic character. The families *Laridæ*, *Colymbidæ*, and *Podicipidæ* are treated monographically with reference to the North American species. The classification and nomenclature are substantially those of the same author's *Key* and *Checklist*. The Introduction is dated at Fort Randall, Dakota, May 13, 1873; the work, however, was almost entirely penned at Washington, D. C., in the winter of 1873–74, and run through the press by December, 1874. New genera are:—*Amphispiza*, p. 234, type *Emberiza bilineata* Cass.; *Æchmorhynchus*, p. 506, type *Tringa parvirostris* Peale.—*Eremophila leucolæma*, n. v., p. 38. Many new names result from rectification of synonymy, some of which only occur in the Index. *Cf. Amer. Sportsm.*, Dec. 5, 1874; Denver (Col.) *Daily News*, Dec. 3, 1874; Washington (D. C.) *Capital*, Mar. 21, 1875; Chicago *Inter Ocean*, Mar. 20, 1875; *Frank Cowan's Paper*, May 22, 1875; *Forest and Stream*, Apr. 15, 1875; *Rod and Gun*, Apr. 17, 1875; *Harper's Weekly*, Apr. 10, 1875; *The Nation*, Apr. 8, 1875; *Rod and Gun*, May 22, 1875; N. Y. *Independent*, Aug. 12, 1875; *Atlantic Monthly*, Sept., 1875; *London Saturday Review*, Aug. 28, 1875; *Popular Science Review*, late in 1875; *Ibis*, 1875, pp. 494–498; *Zool. Rec. for* 1874, p. 31.

1874. COUES, E. Field | Ornithology. | Comprising a | Manual of instruction | for | procuring, preparing and preserving Birds, and a | Check List of North American Birds. | By | Dr. Elliott Coues, U. S. A. | [Monogram.] | Salem: | Naturalists' Agency. | Boston: Estes & Lauriat. | New York: Dodd & Mead. | 1874. 8vo. pp. i–iv, 1–116, 1–137, + 2 ll.

1874. COUES, E.—Continued.

The scope and plan of this work are sufficiently indicated by the title; it contains, however, much matter not ordinarily found in works on taxidermy, the mere preparation of bird skins being a minor consideration. The Checklist, forming the latter half of the volume, is also issued as a separate pamphlet, 1873, *q. v.* It gives ostensibly 635 spp. of recent North American birds (exclusive of numerous local races) and 29 spp. fossil. Various additions and corrections are found in the Appendix. *Cf.* Albany *Cultivator*, Apr. 2, 1874; Springfield *Republican*, Apr. 1, 1874; *Amer. Sportsm.*, Apr. 4, 1874; Boston *Traveller*, Apr. 7, 1874; Boston *Post*, Apr. 8, 1874; *Amer. Sportsm.*, Apr. 11, 1874; *Forest and Stream*, Apr. 9, 1874; *Daily American* (Lawrence, Mass.), Apr. 15, 1874; N. Y. *Tribune*, about Apr. 18, 1874; *Army and Navy Journal*, Apr. 11, 1874; *Field and Stream*, Apr. 18, 1874; Washington *Republican*, May 20, 1874; *Forest and Stream*, July 2, 1874; *Atlantic Monthly*, Nov., 1874, besides other notices cited in this Bibliography.

1874. COUES, E. Avifauna of Colorado and Wyoming. < *Am. Nat.*, viii, 1874, p. 240.

Controversial, with reference to T. M. Brewer, *op. cit.*, vii, 1873, p. 631.

1874. COUES, E. Recent publications on Ornithology. < *Am. Nat.*, viii, 1874, pp. 541–546.

Reviews or shorter notices of:—T. G. GENTRY, *Proc. Phila. Acad.*, 1873, pp. 292, 354; B. A. HOOPES, *ibid.*, p. 238; T. M. BREWER, *Proc. Bost. Soc.*, 1873, p. 106, and *ibid.*, xvi, pt. ii, p. —; R. RIDGWAY, *ibid.*, p. 43, and *Bull. Essex Inst.*, v, pp. 168–174, 197; *Ann. Lyc. N. Y.*, 1874, p. 364; H. W. HENSHAW, *Ann. Lyc. Nat. Hist. N. Y.*, 1874, p. 1; P. L. HATCH, *Bull. Minnesota Acad.*, i, 1874, p. 50; G. N. LAWRENCE, *Mem. Bost. Soc.*, ii, 1874, p. 265; J. REINHARDT, *Afh. Vid. Med. Nat. Foren. Kjöb.*, 1873, p. 123; and JORDAN & VAN VLECK'S *Key* (sm. 16mo, 1874).

1874. COUES, E. On the Nesting of Certain Hawks, etc. < *Am. Nat.*, viii, 1874, pp. 596–603.

Field-notes on 3 *Falconidæ* (*Falco communis*, *Buteo swainsoni*, *Archibuteo ferrugineus*) and numerous other species observed in Montana Territory, U. S. The notes on *Falco* "communis" refer in part to *F. polyagrus*.

1874. COUES, E. The New Work on Birds. < *Am. Sportsman*, iii, 1873–74, p. 412.

Review of *A History of North American Birds* by Baird, Brewer, and Ridgway, giving basis and history of the work.

1874. COUES, E. Birds of Illinois. < *Field and Stream* (newspaper, Chicago, Ill.), May 2, 1874.

A review of R. RIDGWAY, *Ann. Lyc. N. Y.*, x, 1874, pp. 364–394.

1874. DALL, W. H. Notes on the Avifauna of the Aleutian Islands, especially those West of Unalashka. < *Proc. Cala. Acad. Sci.*, pub. in advance, Mar. 14, 1874, 8vo, Salem, Mass., pp. 12.

Excellent field-notes on 45 spp. See 1873, DALL, W. H.

1874. [DEANE, RUTHVEN.] [Letter concerning the origin of the Nuttall Ornithological Club.] < *Am. Sportsman*, iii, 1873–74, p. 264.

1874. DOLE, A. G. Odds and Ends. < *Am. Sportsman*, iv, 1874, p. 3.

Observations upon several game-birds of Maine and vicinity; note upon drumming of *Bonasa umbellus*.

1874. FINSCH, O. "Die zweite deutsche Nordpolarfahrt." (8vo. Leipzig, 1874. ii. Zoologie, 4, pp. 178–279.) With notes by Adolf Pansch.

"Adds 11 species to Graah's 23 from East Greenland. Of these, nearly all are found in Iceland, 21 in Spitzbergen, 29 in Arctic America, and 26 in Northern Asia. Very detailed descriptions with synonymy are given in some instances. See also *tom. cit.* pp. 240–243 for notes by Prof. Newton on the eggs found during this expedition." Not seen—title and commentary from *Zool. Rec. for* 1874, p. 32. (Pub. 1873?)

1874. FINSCH, O. Ueber eine Vögelsammlung aus Südwest-Grönland. < *Abhand. Nat. Ver. Bremen*, 1874, pp. 99–117.
Vortreffliche Bemerkungen über die 28 Arten der Sammlung.

1874. "F. S. B." What some birds eat. < *Forest and Stream*, ii, July 7, 1874, p. 341.
Contents of stomachs of various birds in Kansas; with remarks on habits.

1874. GENTRY, T. G. On Habits of some American Species of Birds. < *Proc. Acad. Nat. Sci. Phila.*, xxvi, 1874, pp. 96–109.
Molothrus pecoris, Agelæus phœniceus, Sturnella magna, Icterus spurius, Corvus americanus, C. ossifragus, Tyrannus carolinensis, Myiarchus crinitus, Antrostomus vociferus, Trochilus colubris, Coccyzus americanus, treated at some length.

1874. HAMMERTON, P. G. Chapters on Animals. Boston, 1874. 8vo. pp. 253. Illustrated by J. Veyrassat and Karl Bodiner.
Not seen.

1874. HARVIE-BROWN, J. A. On a Collection of North American Birds' Eggs and Skins, formed principally by the Rev. C. M. Jones, Conn., U. S. America, and forwarded by the same gentleman. < *Proc. Nat. Hist. Soc. Glasgow*, Dec., 1874, pp. 264–288.
Also separately, with title-page, but not repaged. Notes mostly extracted from the correspondence of C. M. Jones, giving some idea of the nidification of the 86 spp. represented in the collection and of their habits during the breeding season; geographical distribution of each according to Baird's work of 1858. Measurements and descriptions of many of the eggs are also given.

1874. HASKINS, C. C. For the Birds. < *St. Nicholas Mag.*, i, 1874, pp. 72–74, figg. 1–5.
An appeal for mercy to birds.

1874. HATCH, P. L. Report on the Birds of Minnesota. < *Bull. Minn. Acad. Nat. Sci.*, i, 1874, pp. 43–68.
Annotated list of 230 spp., very badly printed. *Cf. Am. Nat.*, viii, Sept., 1874, pp. 544, 545.

1874. HENSHAW, H. W. On a Hummingbird new to our Fauna, with certain other facts ornithological. < *Am. Nat.*, viii, 1874, pp. 241–243.
Eugenes fulgens in Arizona; field-notes on *Centronyx bairdi* and *Podiceps californicus*; *Sphyrapicus williamsoni* is ♂ of *S. thyroideus*.

1874. HENSHAW, H. W. An annotated List of the Birds of Utah. < *Ann. Lyc. Nat. Hist. N. Y.*, xi, 1874, pp. 1–14.
214 spp., those known to breed indicated by asterisk. The list rests upon the writer's and H. C. Yarrow's observations in 1872 for 160 spp., the rest being compiled from J. A. Allen's list (*Bull. Mus. Comp. Zool.*, iii, 1872, p. 113, *seq.*), and MS. communications of R. Ridgway.—(Reprinted in *Report upon Ornith. Specimens, &c., Lt. Wheeler's Expl.*, 1874, pp. 39–54. See 1874, YARROW, H. C., *and* HENSHAW, H. W.

1874. "HOMO." [C. S. WESTCOTT.] The Migration of Birds. < *Am. Sportsman*, iv, 1874, p. 243. See, also, p. 339.
Includes, under sub-heads, a biography of *Porzana carolina*, and remarks upon the scarcity of *Philohela minor*.

1874. HOWELL, M. A., JR. Among the Waterfowl of the West. < *Harper's New Monthly Mag.*, xlix, pp. 790–800, 11 illustrations.
Biographical, hunting, and humorous sketch.

1874. Hoy, P. R. Some of the peculiarities of the Fauna near Racine. < *Trans. Wisconsin Acad.*, ii, for 1873–74, 1874, pp. 120–122.

8 spp. birds from the south, 10 from the north, showing the meeting of distinct faunæ at this point.

1874. "J. E. M." Early Birds [at Columbia, Pa.]. < *Am. Sportsman*, iii, 1874, p. 411.

1874. Jenks, J. W. P. Instinct or Reason? < *Am. Sportsman*, v, Dec. 5, 1874, p. 145.

Sagacity of Orioles (*Icterus baltimore*) in giving extra support to their nest after experience had proved that its fastenings were weak; departure from type of architecture to meet an emergency in the Boat-tailed Grakle (*Quiscalus major*).

1874. Jordan, D. S., *and* Van Vleck, B. H. A Popular Key | to the | Birds, Reptiles, | Batrachians and Fishes, | of the | Northern United States, | East of the Mississippi River. | By | Prof. David S. Jordan, M. S., | and Balfour H. Van Vleck. | Appleton, Wis.: | Reid & Miller, Printers and Publishers. | 1874. sq. 16mo pamph. 2 p. ll., pp. 85 + 3.

The less said of this crude production the better. But it proved to be the initial step toward Prof. Jordan's admirable *Manual of Vertebrates*, etc., 1876, *q. v.*

1874. Kirtland, J. P. Letter from Prof. Kirtland [dated 1857, on the natural history of Indiana—mention of various birds]. < *Proc. Cleveland Acad. Nat. Sci.*, 1874, pp. 131–132.

1874. Kirtland, J. P. Peculiarities of Climate, Flora and Fauna of the South Shore of Lake Erie, in the vicinity of Cleveland, Ohio. < *Proc. Cleveland Acad. Nat. Sci.*, 1874, pp. 165–171.

Read 1851, and originally published in *Am. Journ. Sci.*, xiii, 1852.

1874. Kirtland, J. P. Mounted Birds from Northern Ohio, in the Academy's Museum. < *Proc. Cleveland Acad. Nat. Sci.*, 1874, pp. 200–287.

The article includes only the *Accipitres* and a few *Insessores*, but is quite full, as far as it goes, with characters of the genera and higher groups, and descriptions and biographies of the species. It is annotated by Thomas Brown, editor of the *Ohio Farmer*, in which the descriptions originally appeared, and was prepared in 1858–59.

[1874.] Krider, J. Ornithological | and Oological List | of | North America. | — | John Krider, | Taxidermist, | N.E. corner Second and Walnut sts., | Philadelphia, U. S. A. [1874.] Sm. 4to. pp. 20.

Same as the list of 1861, with addition of 24 *a*, *Buteo kriderii*.

1874. Lawrence, G. N. The Birds of Western and Northwestern Mexico, based upon Collections made by Col. A. J. Grayson, Capt. J. Xantus, and Ferd. Bischoff, now in the Museum of the Smithsonian Institution, at Washington, D. C. < *Mem. Bost. Soc. Nat. Hist.*, ii, pt. iii, art. ix, 1874, pp. 265–319. (Also issued separately, 4to, paper.)

Important. 316 spp., the list fully annotated, with extracts from MSS. biographies of Col. Grayson's, and author's critical commentary. Various new species contained in the several collections had shortly before been described elsewhere by the author or S. F. Baird.

1874. Lockington, W. N. [Notice of a communication containing notes on the Mammals and Birds of Humboldt Co., California.] < *P. Z. S.*, 1874, p. 129.

1874. Long, J. W. American Wild-fowl Shooting, [etc.] By Joseph W. Long. 1 vol. 12mo. New York, 1874. pp. 285.

Above title defective and inexact.

1874. MAYNARD, C. J. A Naturalist's trip to Florida. < *Am. Sportsman*, iv, 1874, pp. 2, 22, 66, 114, 162, 226; v, pp. 34, 81, 193, 226, 342.

1874. MERRIAM, C. H. Ornithological Notes from the South. < *Am. Nat.*, viii, 1874, pp. 6–9.

Field observations in South Carolina, with list of 54 spp. noticed.

1874. MERRIAM, C. H. Ornithological Notes from the South. II. Florida. < *Am. Nat.*, viii, Feb., 1874, pp. 85–89.

1874. MERRILL, J. "S." [*i. e.*, C.] History of North American Birds. < *Am. Nat.*, viii, 1874, pp. 546–552.

A notice of S. F. BAIRD, T. M. BREWER, and R. RIDGWAY'S *History of North American Birds.*

1874. "MERRIMACK." [Movements of migratory birds at Manchester, N. H.] < *Am. Sportsman*, iv, 1874, p. 5.

1874. NEWTON, A. "Die zweite deutsche Nordpolarfahrt." (8vo. Leipzig, 1874. ii, Zoologie, 5, pp. 240–243.)

Not seen—title from *Zool. Rec.*, where it appears that eggs of 8 spp. of birds from East Greenland are described in this article.

1874. OBER, F. A. Birds [60 spp.] of Lake Okeechobee [Florida]. < *Forest and Stream*, ii, April 23, 1874, p. 162.

1874. PALMER, F. H. Insect-eating Birds. < *Eighteenth Ann. Rep. Sec'y Maine Board Agric. for* 1873 (papers accompanying), 1874, pp. 203–216, figg.

Prize essay of Massachusetts Society for the Prevention of Cruelty to Animals, by which it is also published separately. It treats of food of various N. Am. birds beneficial to agriculture, etc.; means for their protection, etc.

1874. REINHARDT, J. Notitser til Grönlands Ornithologi. < *Vidensk. Medd. fra den naturh. For. Kjöben.*, 1874, Nr. 12–16, p. 188.

Not seen.

1874. RIDGWAY, R. The Wabash Valley and its Avian Fauna. < *Proc. Bost. Soc. Nat. Hist.*, xvi, 1874, pp. 304–332.

Total of spp. 288; found irrespective of season, 77; in summer, 92; in winter 47; in spring and fall, 72; number of spp. breeding, about 155; wintering, 155. *Cf. Zool. Rec. for* 1874, p. 32.

1874. RIDGWAY, R. The Lower Wabash Valley, Considered in its relation to the Faunal Districts of the Eastern Region of North America: with a Synopsis of its Avian Fauna. By Robert Ridgway. Boston. 1874. 8vo. pp. 31.

Repaged oversheets from *Proc. Bost. Soc. Nat. Hist.*, xvi, Feb. 18, 1874.

1874. RIDGWAY, R. Notes upon American Water Birds. < *Am. Nat.*, viii, Feb., 1874, pp. 108–111.

Critical and nomenclatural. *Ægialitis microrhynchus*, *Æ. melodus* var. *circumcinctus*, *Æ. wilsonius* var. *rufinucha*, p. 109; *Ibis thalassinus* [=*guarauna juv.*], p. 110; *Rallus elegans* var. *obsoletus*, *R. e.* var. *tenuirostris* (Lawr.), *Porzana jamaicensis* var. *coturniculus* (Baird), *Anas obscura* var. *fulvigula*, p. 111, are apparently nn. spp. or varr.

1874. RIDGWAY, R. On Local Variations in the Notes and Nesting Habits of Birds [of North America]. < *Am. Nat.*, viii, 1874, pp. 197–201.

1874. RIDGWAY, R. Two Rare Owls from Arizona. < *Am. Nat.*, vii, No. 4, April, 1874, pp. 239, 240.

Syrnium occidentale and *Micrathene whitneyi*; also, notice of *Asturina plagiata* from Arizona.

1874. RIDGWAY, R. Birds New to the Fauna of North America. < *Am. Nat.*, viii, 1874, pp. 434, 435.

Falco gyrfalco (since determined by Mr. Ridgway to be *F. communis* var. *pealei*), *Numenius femoralis*, both from Alaska.

1874. RIDGWAY, R. The Nomenclature of American Game Birds. < *Am. Sportsman*, iii, 1874, pp. 210, 211, figg. 1–3; pp. 226, 227.

Explaining classification of *Gallinæ* and stating principles and value of scientific nomenclature. Letters are appended from Prof. S. F. Baird and J. Hammond Trumbull concerning Indian names for game-birds.

1874. RIDGWAY, R. Catalogue of the Birds Ascertained to occur in Illinois. < *Ann. Lyc. Nat. Hist. N. Y.*, x, 1874, pp. 364–394.

By far the best of the several Illinois State lists hitherto published. The annotation brief, but to the point. 311 spp.; breeders, 176; 48 more spp. indicated as of probable though unascertained occurrence. Various combinations of generic, specific, and varietal names are here for the first time used.—*Cf. Am. Nat.*, viii, Sept., 1874, p. 543; *Field and Stream* (newspaper, Chicago), May 2, 1874.

1874. "ROAMER." Roamers. < *Forest and Stream*, iii, Dec. 31, 1874, p. 324.

Various birds at an unusually northern latitude in winter; chiefly waterfowl.

1874. SIM, GEORGE. The Food and Use of Our Rapacious Birds. < *Am. Sportsman*, iv, 1874, p. 259.

Examinations of contents of stomachs of predatory birds, and plea for their preservation. Quoted from the *Scottish Naturalist*.

1874. SLACK, HENRY J. Birds as Architects. < *Scribner's Monthly Mag.*, vii, 1874, p. 252.

1874. "SNAP." [Notes upon] Birds and Snakes [at Sidney, Ohio]. < *Am. Sportsman*, iv, 1874, p. 10.

1874. SNOW, F. H. Birds of Kansas. < *Trans. Kans. Acad. Sci.*, 1874, pp. 30, 31.

1874. SNOW, F. H. Birds of Kansas. < *Am. Nat.*, viii, 1874, p. 757.

Adds 6 spp. to his list of 1872.

1874. SNOW, F. H. Birds of Kansas. < *Observer of Nature* (newspaper), for April 1, 1874.

Of these 6 spp., 5 are additional to former lists, raising the number to 287; see 1873 and 1872, SNOW, F. H.

1874. TRIPPE, T. M. The Migration of Birds. < *Am. Nat.*, viii, 1874, pp. 338–348.

A short essay on the general subject, with special reference to North American species.

1874. TRUMBULL, J. H. [Indian names of Game Birds.] < *Am. Sportsman*, iii, 1874, p. 227.

1874. TRUMBULL, J. H. Letters and extracts on Game Nomenclature. < *Am. Sportsman*, iii, 1874, p. 243.

Extracts from early writers, showing names applied to game-birds in New England in the 17th century.

1874. V[ERRILL, A. E.] Field Ornithology. . . . By Dr. Elliott Coues, U. S. A. < *Am. Journ. Sci.*, vii, 1874, p. 603.

Notice of the work.

1874. YARROW, H. C. Engineer Department, United States Army. | — | Progress-report | upon | Geographical and Geological | Explorations and Surveys | west of the one hundredth meridian, | in 1872, | under the direction of | Brig. Gen. A. A. Humphreys, | Chief of Engineers, United States Army, | by First Lieut. George M. Wheeler, | Corps of Engineers, in charge. | — | Washington: | Government Printing Office. | 1874. 1 vol. 4to, paper. pp. 56. >Appendix E, pp. 52–55.

A report of progress in natural history collections, largely ornithological, made by Dr. Yarrow and Mr. H. W. Henshaw.

1874. YARROW, H. C., *and* HENSHAW, H. W. Engineer Department, U. S. Army. | = | Geographical and Geological Explorations and Surveys | west of the one hundredth meridian. | First Lieutenant Geo. M. Wheeler, Corps of Engineers, in charge. | — | Report | upon | Ornithological Specimens | collected in | the years 1871, 1872, and 1873. | — | Washington: | Government Printing Office. | 1874. 8vo pamph. 1 p. l., pp. 148.

Contains 4 separate articles, namely:—(1) "Report upon and List of Birds collected by the Expedition for Explorations west of the One hundredth Meridian in 1872", &c., by Dr. H. C. Yarrow and Henry W. Henshaw, pp. 5–33. (2) 'List of Birds collected by Lieut. G. M. Wheeler's Expedition, 1871", pp. 34–38. (3) "An Annotated List of the Birds of Utah", by H. W. Henshaw, pp. 39–54 (reprinted from *Ann. Lyc. Nat. Hist. N. Y.*, xi, 1874, pp. 1–14). (4) "Report upon and List of Birds collected by the Expedition for Geographical and Geological Explorations and Surveys west of the One hundredth Meridian in 1873", &c., by H. W. Henshaw, pp. 55–148. (1) is an annotated list of numerous species of Utah and Nevada. (2) is a nominal list of various species collected in Nevada and Arizona. (3) is reprinted from *Ann. Lyc.*, which see. (4) is divided into three sections:—Sect. I, Observations on 82 spp. found at Denver, in May; II, on 104 spp. at Fort Garland, Colorado; III, on 185 spp. of Western New Mexico and Eastern Arizona. All the matter of these several papers rests upon original observations, and the series is a valuable contribution to our knowledge of the avifauna of the Southwest. *Cf. Zool. Rec. for* 1875, p. 58.

1874. YOUNT, HARRY. Sporting Life in Wyoming Territory. < *Am. Sportsman*, iv, 1874, p. 114.

Notes on some birds of the Rocky Mountains.

1874–75. HARVEY, M. The Birds of Newfoundland. < *Forest and Stream*, iii, 1874, pp. 53, 196; 1875, 341.

1874–75. RIDGWAY, R. Lists of Birds observed at various localities contiguous to the Central Pacific Railroad, from Sacramento City, California, to Salt Lake Valley, Utah. < *Bull. Essex Inst.*, vi, No. 10, Oct., 1874, pp. 169–174; vii, Nos. 1 and 2, Jan. and Feb., 1875, pp. 10–40.

Observations made during the survey of the 40th parallel, Clarence King. "The present paper is a mere abstract of that portion of the zoological report of the survey relating to the character and distribution of the local avifaunæ encountered along the route of exploration, and is published in its present form in order to acquaint ornithologists, as soon as possible, with the results of ornithological investigations made by the Expedition." (See the final report, 1877.) *Cf. Zool. Rec. for* 1875, p. 49.

1874–78. JASPER, T. The Birds of North America drawn from Life and uniformly Reduced to One-Quarter their Natural Size by Theodore Jasper, A. M., M. D—Jacob H. Studer, Publisher Columbus, Ohio . . . Folio. Publ. in parts, n. d. Parts i–v, Jan. 29, 1874; vi, Apr. 8, 1874; vii, June 9, 1874; viii, July 16, 1874; ix, Aug. 18, 1874; x, Sept. 23, 1874; xi, Oct. 22, 1874; xii, Mar. 2, 1875; xiii, Mar. 24, 1875; xiv, xv, June

1874–78. JASPER, T.—Continued.

29, 1875; xvi, xvii, Sept. 18, 1875; xviii, xix, Jan. 26, 1876; xx, xxi, Apr. 20, 1876; xxii, xxiii, July 26, 1876; xxiv, xxv, Oct. 7, 1876; xxvi, xxvii, Jan. 3, 1877; xxviii, xxix, May 12, 1877; xxx, xxxi, Aug. 6, 1877; xxxii, xxxiii, Nov. 5, 1877; xxxiv, xxxv, Mar. 8, 1878; xxxvi, xxxvii, June 8, 1878; xxxviii, xxxix, Sept. 23, 1878; xl, announced for Oct., 1878; each part consisting of 3 colored and 1 flat-tinted plate, and 8 pages (or 4 folios) of text; plates in 2 series, and text in 2 sets of pagination; the whole designed to form 2 vols.

The work is really two works in one, each of them to form a separate volume. One set of plates, colored, numbered in Roman, I-CXX? (or I-CXIX?) is accompanied by the general letter-press, treating of the North American birds represented on these plates. The other set of plates, Arabic Nos., 1–40, flat-tinted, has also its letter-press, separately paged. Three of the colored plates and their text and one of the plain plates and its text form together each number. I cannot give the exact pagination, etc., as the work is not finished, and the above is only the cover-title, moreover modified in some respects with successive parts; the permanent title may be literally different again; title-pages, indexes, frontispieces, etc., are announced for the concluding number.

On its first appearance, this work was promptly set upon by the critics, with such effect that it has scarcely been recognized, and has seldom, if ever, been cited by the "regular" ornithologists. But the publication has nevertheless steadily progressed to a successful conclusion, and now forms a really notable work, open to much less serious objections than at first seemed imminent, and worthy of all proper consideration. As a business enterprise, the affair has apparently been a success; *five* "editions" (issues of additional impressions) have been called for, showing that the work answers the popular demand. It seems better suited to the tastes and wants of the populace than any other ornithological work which has ever appeared in this country, though it will never be conceded to have any weight or authority with ornithologists. Of the illustrations, much might be said according to the perspective in which we choose to regard them; the truest perspective is perhaps the price at which they are issued—four of them, 12 × 15 inches, with 8 pp. of text, for a dollar. They maintain the same character throughout the series. The text, on the contrary, has steadily improved from the first; it consists of a general account of the objects delineated, beginning usually with a few original words, and for the rest consisting of copious extracts from authors, from Wilson, Audubon, and Nuttall to those of to-day. This is the *Birds of North America* part; the other part of the work, separately paged, and with its 40 plain plates, is a general treatise on ornithology, the classification, etc., of which is modelled after Brehm; it is less satisfactory than the main part of the work.

1875. ABBOTT, C. C. The Migration of inland Birds. < *Rod and Gun*, vi, July 10, 1875, p. 230; and July 17, p. 243.

Reprinted from *Pop. Sci. Monthly*.

1875. "ALASKA." [H. W. ELLIOTT.] Disappearance of certain song-birds. < *Rod and Gun*, vi, May 15, 1875, p. 97.

1875. A[LLEN], J. A. Dr. Coues's Birds of the Northwest. < *Am. Nat.*, ix, No. 8, Aug., 1875, pp. 466–468.

1875. ALLEN, J. A. Coues's Birds of the Northwest. < *Atlantic Monthly*, xxxvi, Sept., 1875, pp. 365–368.

Review of the work.

1875. ALLEN, J. A. "Birds of the Northwest." < *Rod and Gun*, vi, May 22, 1875, p. 119.

Protesting against the position taken by the reviewer of the work, *tom. cit.*, p. 39, in regard to the inside history of the publication. The editor (W. F. Parker) defends the previous criticism in a note appended to the letter.

1875. [ANON.] [Review of Wilson Flagg's "Birds and Seasons of New England".] < *Appleton's Journ.*, xiii, June, 1875, p. 788.

1875. [ANON.] Fauna of Eastern Florida. [Birds.] < *Forest and Stream*, iii, Jan. 7, 1875, p. 340.

1875. [ANON.] [Birds of the Northwest.] < *Forest and Stream*, iv, March 18, 1875, p. 92.
Notice of the work of that name.

1875. [ANON.] The Arrival of Birds as observed at Utica. < *Oologist*, i, 1875, p. 38.

1875. [ANON.—H. C. YARROW.] Dr. Coues' New Book—"Birds of the Northwest." < *Rod and Gun*, vi, April 17, 1875, p. 39. See, also, p. 119.
While speaking very pleasantly of the work itself, the writer of this review reflects severely upon the U. S. Geological Survey, under which it was published, and the circumstances ostensibly attending its publication. The reviewer's attitude is promptly resented by J. A. ALLEN, *tom. cit.*, p. 119.

1875. [ANON.] [Announcement of intended catalogue of the birds of Southern Michigan, by A. H. Boies.] < *Rod and Gun*, vi, May 22, 1875, p. 119.

1875. [ANON.] Killing insectivorous Birds. < *Rod and Gun*, vi, July 10, 1875, p. 232.

1875. [ANON.] [Dates of] Arrival of Birds at Grafton, Canada. < *Rod and Gun*, vi, July 10, 1875, p. 234.

1875. [ANON.] Some Observations on the Birds of Ritchie Co., W. Va. < *Rod and Gun*, vi, Aug. 14, 1875, p. 295.
Notice of W. Brewster's paper in *Ann. N. Y. Lyc. N. H.*, vol. xi, June, 1875, pp. 129–146, *q. v.*

1875. [ANON.] The Bird Question. < *Rod and Gun*, vi, Sept. 18, 1875, p. 375.
Abstract of paper in *Proc. Illinois Hort. Soc.*, showing utility of birds in agriculture.

1875. ARNOLD, W. W. A history of my pets. < *Rod and Gun*, vi, April 10 and Aug. 14, 1875, pp. 22 and 249.
Various American birds included.

1875. BAILEY, J. S. The Migration of Birds. < *Forest and Stream*, iv, April, 22, 1875, p. 172.

1875. BATTY, J. H. Winter collecting in Minnesota. < *Am. Sportsman*, v, 1875, Jan. 23, p. 262.
List of birds included.

1875. BATTY, J. H. Our Hawks and Owls. < *Forest and Stream*, iv, July 15, 1875, p. 374.

1875. BOIES, A. H. Catalogue of the Birds | ascertained to occur in | Southern Michigan; | together with | the Game and Fish Laws | of Michigan, | and | Miscellaneous Articles for Sportsmen. | By A. H. Boies. | — | Hudson, Mich.: | W. T. B. Schermerhorn printer. | 1875. 8vo pamphl., not paged (foll. 12).
211 spp., briefly annotated.

1875. "BOONE." [JOSHUA COOKE.] A Blizzard. < *Rod and Gun*, vi, April 3, 1875, p. 2.
How prairie birds survive the rigorous climate and icy gales on the plains of the Northwest.

1875. BREWER, T. M. Catalogue of the Birds of New England, with brief notes indicating the manner and character of their presence; with a list of species included in previous catalogues believed to have been wrongly classed as Birds of New England. < *Proc. Bost. Soc. Nat. Hist.*, xvii, 1875, pp. 436–454. Also sep. pub. 8vo pamph., 1875, pp. 21.

336 spp., fully annotated; followed by a critical commentary on the claims of 29 more to be included in the fauna of New England. The writer eliminates from the New England list 29 spp. which had been admitted by other writers, especially Coues; these being "in his judgment" not entitled to place. A very few species are given additional to Coues's List of 1868. Stragglers are marked by asterisk. "It has been my sole aim to furnish a list that shall be reliable so far as it goes. I may have omitted some that are entitled to a place. Be it so; I had rather omit ten that may be found, than include one that never has been." Such stringency is unfavorable to a scientific method of *compiling* a local avifauna. *Cf. The Independent* (newspaper), Oct. 7, 1875.

1875. BREWSTER, W. Some observations on the Birds of Ritchie County, West Virginia. < *Ann. Lyc. Nat. Hist. N. Y.*, xi, 1875, pp. 129–146.

Very fully annotated, and an extensive list, containing some valuable information.

1875. BROWN, N. C. Ornithological Notes from Portland, Maine. < *Rod and Gun*, vi, May 8, 1875, p. 81.

Notes upon deformity in *Plectrophanes nivalis*; occurrence of *Passerculus princeps* and *Ardea egretta*; also, note on *H. egretta*, by Ruthven Deane. Read before Nuttall Ornith. Club, April 24, 1875.

1875. BRUHIN, T. A. Die Vögel von New Coeln im Staate Wisconsin. < *Zool. Gart.*, 1875, p. 414.

Not seen—title from *Zool. Rec.* "A bare list of about a hundred species with a few notes giving the time of year in which some of them were observed."

1875. BURROUGHS, J. Birds and Seasons of New England. < *Scribner's Monthly*, xi, 1875, p. 293.

Review of Wilson Flagg's *Birds and Seasons of New England.*

1875. CHICKERING, J. J. Notice of White Mountain [N. H.] Birds and Insects. < *Field and Forest*, i, No. 6, Nov., 1875, p. 48.

Mere mention of some half dozen species.

1875. COOPER, J. G. New Facts relating to Californian Ornithology. < *Proc. Cala. Acad. Nat. Sci.*, Dec. 6, 1875, pp. — — —. Also, repaged oversheets, 8vo, pp. 14.

Critical commentary on about 50 spp., with special reference to latest information secured respecting them.

1875. COPE, [E. D.] On an Extinct Vulturine Bird. < *Proc. Phila. Acad. Nat. Sci.*, 1875, p. 271.

Vultur umbrosus, formerly described as *Cathartes umbrosus*, now referred to *Vulturidæ.*

1875. COUES, E. A Report | upon the | Condition of Affairs | in the | Territory of Alaska. | — | By | Henry W. Elliott, | Special Agent Treasury Department. | — | Washington: | Government Printing Office. | 1875. 1 vol. 8vo. pp. 277. > Chapter IX. Ornithology of the Prybilov Islands. By Dr. Elliott Coues, U. S. A. pp. 166–212.

A reprint verbatim of the original which formed the Ornithological Appendix of Elliott's 4to "portfolio" ed. of the same work, 1873, *q. v.*

1875. COUES, E. On the Breeding of certain Birds. < *Am. Nat.*, ix, No. 2, Feb., 1875, pp. 75–78.

Of Montana Territory, U. S. *Aquila chrysaëtos, Histrionicus torquatus, Ampelis garrulus, Neocorys spraguii*, etc.

1875. C[OUES], E. A Late Paper on Birds. < *Am. Nat.*, ix, No. 10, 1875, pp. 570, 571.

W. Brewster's on West Virginia birds, in *Ann. Lyc.*, xi, 1875, pp. 129–146.

1875. [COUES, E.] [Notice of T. M. Brewer's Catalogue of the Birds of New England (Pr. Bost. Soc., xvii, pp. 436–454).] < *The New York Independent* (newspaper), Oct. 7, 1875.

1875. COUES, E. Fasti Ornithologiæ Redivivi.—No. 1. Bartram's 'Travels.' < *Proc. Phila. Acad. Nat. Sci.*, 1875, pp. 338–358.

An extended review of Bartram as an ornithologist, claiming that this author's names are available; 215 spp., 52 left undetermined, 163 identified. Of the identified binomial names, 20 are considered tenable, 5 of them being already in general employ. The article, like those of Cassin's, whose title is appropriated, was received with disfavor, mainly, it would seem, on account of the trouble it would make in the way of nomenclatural changes, should the position assumed be considered tenable. *Cf. Zool. Rec. for* 1875, p. 30; *Am. Nat.*, x, 1876, pp. 21, 98, 176.

1875. DAWSON, G. M. British North American Boundary Commission | Report | on the | Geology and Resources | of the | region in the vicinity of | the forty-ninth parallel, | from the Lake of the Woods to the Rocky Mountains. | With | lists of plants and animals collected, and notes | on the fossils. | By | George Mercer Dawson, Assoc. R. S. M., F. G. S., | Geologist and Botanist to the Commission, | addressed to Major J. D. Cameron, R. A., | H. M. Boundary Commissioner. | [Arms.] | Montreal: | Dawson Brothers, St. James street. | London: Sampson, Low & Co. | New York: B. Westermann & Co. | 1875. 1 vol. 8vo. pp. i–xi, 1–397, pll. i–xviii, 3 col'd fold'd maps.

Pages 280–283, list of arrivals of birds in spring of 1874, at Dufferin, Manitoba, near Pembina, Dakota, with extracts from Sir John Richardson's observations for Cumberland House and Carleton House.

1875. DEANE, R. The Nuttall Ornithological Club. < *Am. Sportsman*, v, 1874–75, Feb. 13, p. 312.

Circular of the Club, signed by Ruthven Deane, sec'y, and Ernest Ingersoll and Walter Wood, publication committee, with reference to publication of proceedings.

1875. FLAGG, W. The | Birds and Seasons | of New England. | By Wilson Flagg, | author of "The Woods and By-ways of New England." | With Illustrations. | [Quotation.] | [Trademark.] | Boston: | James R. Osgood and Company, | Late Ticknor & Fields, and Fields, Osgood, & Co. | 1875. 1 vol. sm. 8vo. pp. i–vi, 1 l., pp. 1–457, 12 heliotype pll.

"The title of this work does not give the reader a full understanding of its scope and contents, as it treats of Scenes and Flowers as well as of Birds and Seasons. . . . My essays are not biographies of the Birds. I treat of them chiefly as songsters, and speak only of those habits which render them useful, interesting, or picturesque. . . . I would remind the reader that some parts of my book have already appeared in print."—(*Extracts from Introduction.*) The author writes like a close observer, as well as a lover of birds who has discovered that they may subserve other than ornithological purposes; though the fullest appreciation of the poetry of their lives is not incompatible with the power to discriminate between the genera *Antrostomus* and *Chordiles;* nor does

1875. FLAGG, W.—Continued.

this latter ability make one quite an "extraordinary pedant" (see p. 288). The delightful treatise may touch elbows on the shelf with Burroughs's *Wake Robin;* they both refresh and recreate whom the galling of the technic-harness has made sore.

1875. GARDNER, DORSEY. Wilson the Ornithologist. < *Scribner's Monthly*, xi, 1875, pp. 690–703; four illustrations.

Biographical notice of Alexander Wilson.

1875. GAUMER, G. F. Ornithological notes [upon 12 spp. of Kansas birds, with list of 36 other spp. observed Mar. 13, 1875]. < *Observer of Nature* (newspaper), Mar. 24, 1875.

1875. GRINNELL, G. B. Engineer Department, U. S. Army. | — | Report | of a | Reconnaissance | of the | Black Hills of Dakota, | made in | the summer of 1874. | By William Ludlow, | Captain of Engineers, Bvt. Lieut. Colonel U. S. Army, | Chief Engineer Department of Dakota. | — | Washington: | Government Printing Office. | 1875. 1 vol. 4to. pp. 121. > Zoological Report. By George Bird Grinnell. Chap. II. Birds, pp. 85–102.

Consists of excellent field-notes on the birds observed on the expedition, 110 in number, being a large majority of those inhabiting the locality.

1875. GRINNELL, G. B. The Frigate Bird [Tachypetes aquila] and White Ibis [Ibis alba] in Connecticut. < *Am. Nat.*, ix, No. 8, Aug., 1875, p. 470.

1875. "H." The Close Season for Game Birds. < *Rod and Gun*, vi, May 15, 1875, p. 106.

Facts concerning growth and habits of game-birds; see also letter "Times and Seasons" on the same page, and much elsewhere.

1875. HARTING, J. E. The Fauna | of the | Prybilov Islands | abridged from the | "Report on the Prybilov Group or Seal Islands of Alaska," | by Henry W. Elliott; with an Appendix on the | Ornithology by Dr. Elliott Coues (Washington, 1873). | By J. E. Harting, F. L. S. F. Z. S. | London | reprinted from the Natural History columns of | "The Field" for private circulation | 1875 Pamph. pp. 38, pl. 1.

Aves, pp. 15–36, thus occupying the greater part of this excellent digest of the original. *Tringa ptilocnemis* Coues (= *T. gracilis* Hart.) is rediscussed. The pl. (from *P. Z. S.*) shows bill, feet, and tail of this species, and of *T. alpina* and *T. crassirostris*. See the original, 1873, COUES, E.

1875. HENSHAW, H. W., *and* AIKEN, C. E. Annual Report | upon the | Geographical Explorations and Surveys west of the | one hundredth meridian, in California, Nevada, | Nebraska, Utah, Arizona, Colorado, New | Mexico, Wyoming, and Montana, by George M. Wheeler, | First Lieutenant of Engineers, U. S. A.; | being | Appendix L L | of the | Annual Report of the Chief of Engineers for 1875. | — | Washington: | Government Printing Office. | 1875. 8vo. pp. i–iv, 1 l., pp. 1–196, maps, views, etc. > App. I 1, I 2, pp. 139–166.

This publication contains three ornithological papers, namely:—"Notes upon the Ornithology of the Region traversed", by Mr. Henshaw, pp. 149, 150, relating to New Mexico and Arizona; "Notes on the Ornithology observed by Mr. C. E. Aiken, assistant", pp. 150–153, relating to Colorado; and, especially, an "Annotated List of the Birds of Arizona", by Mr. Henshaw. The latter treats of "291" (*i. e.*, 293) spp., and is by far the most complete enumeration extant, besides being fully annotated with field-notes of local distribution, abundance or scarcity, times of appearance, etc. The breeders are marked with an asterisk. The list

1875. HENSHAW, H. W., *and* AIKEN, C. E.—Continued.
is of excellent authority, being based upon the author's personal observations, supplemented by those of Dr. Coues, Dr. Cooper, Captain Bendire, and others, which are freely quoted. The two minor papers call for no remark.

1875. HOFFMAN, W. J. List of Birds observed at Grand River Agency, Dakota Ter., from October 7th, 1872, to June 7th, 1873. < *Proc. Bost. Soc. Nat. Hist.*, xviii, 1875, pp. 169–175.
79 spp., annotated.

1875. INGERSOLL, E. The Autumnal Migration of Birds. < *Forest and Stream*, v, Nov. 4, 1875, p. 195.
Reprinted from *The Christian Union*.

1875. INGERSOLL, E. [List of various birds which have flown at night into the upper windows of The Tribune office, New York City.] < *Forest and Stream*, v, Nov. 4, 1875, p. 195.

1875. INGERSOLL, E. The Ornithology of the Black Hills. < *Forest and Stream*, v, Dec. 2, 1875, p. 260.
Review, with copious extracts, of G. B. Grinnell's *Zoological Report*, in Capt. Ludlow's *Report of a Reconnaissance of the Black Hills*, etc., 1875, *q. v.*

1875. [INGERSOLL, E.] Birds with Teeth. < *Forest and Stream*, v, Dec. 30, 1875, p. 323.
Statement of Prof. O. C. Marsh's palæontological discoveries of *Odontornithes*.

1875. "INGHE." [E. INGERSOLL.] The Vacation of an Ornithologist. < *Forest and Stream*, iv, July 15, 1875, p. 358.
Experiences in Ritchie Co., West Virginia.

1875. "K." [Early spring birds at Perth Amboy, N. J.] < *Forest and Stream*, iv, March 25, 1875, p. 101.

1875. K[EENE], S. W. Birds of the Northwest. < *Forest and Stream*, iv, April 15, 1875, p. 157.
Review of *Birds of the Northwest*, etc.

1875. L[E MOINE], J. M. Winter Birds [at Quebec, C. E.] < *Am. Sportsman*, v, Jan. 2, 1875, p. 219.

1875. MARSH, O. C. Odontornithes, or Birds with Teeth. < *Am. Nat.*, ix, No. 12, 1875, pp. 625–631, pll. 2, 3.
Pub. in part in *Am. Journ. Sci.*, x, Nov., 1875.—*Ichthyornis dispar*, pl. 2; *Hesperornis regalis*, pl. 3—former type of order *Odontormæ*, latter of order *Odontolcæ*; *Odontormæ vice Ichthyornithes*, preoccupied.

1875. MAYNARD, C. J. A Naturalist's Vacation. < *Rod and Gun*, vii, Oct. 30, 1875, p. 65.
Field-notes, Aug. 27–Sept. 21, in Pennsylvania.

1875. MAYNARD, C. J. Birds observed during a few hours stroll about Wilmington, N. C. < *The Scientific Monthly* (Toledo, Ohio), i, No. 1, Oct., 1875, pp. 32–34.
An interesting though small list of 19 spp.

1875. NELSON, E. W. Notes on Birds observed in portions of Utah, Nevada, and California. < *Proc. Bost. Soc. Nat. Hist.*, xvii, 1875, pp. 338–365.
I. Vicinity of Fort Bridger, Utah, June 22–July 24, 1872, 19 spp. II. Near Salt Lake City, July 27–Aug. 8, 1872, 41 spp. III. A. Vicinity of Elko, Nevada, Aug. 9–14, 1872, 33 spp.; B. 25 miles north of Elko, August, 72 spp. The several lists well annotated.

1875. NEWTON, A. Notes on Birds which have been found in Greenland. By Alfred Newton, M. A., F. R. S., Professor of Zoology and Comparative Anatomy in the University of Cambridge. London. 1875. 8vo pamphlet. pp. 94–115.

This article, of which I have only seen a separately printed copy, constitutes No. vi, pp. 94–115, of a "Manual of the Natural History [etc.] of Greenland and the neighbouring regions, 8vo, London, 1875", ordered by the English Admiralty to be drawn up in view of the expedition of the same year, and is compiled in accordance with official instructions, which accounts for its form. Spp. 63 + 62, summarily treated as to geographical distribution, etc. *Cf. Zool. Rec. for* 1875.

1875. "OOLOGIST." Reminiscences of a Collector. < *Oologist*, i, 1875, pp. 50, 51, 57–59, 65, 66.

A boy's narrative, containing some items respecting North American birds.

1875. "OVUM." Migration of Birds. < *Oologist*, i, 1875, pp. 13, 14.

1875. RIDGWAY, R. Snow Birds and Little Owls. < *Am. Sportsman*, v, Mar. 20, 1875, p. 393.

Information upon *Junco*, *Plectrophanes*, etc., and *Scops asio*.

1875. RIDGWAY, R. First impressions of the Bird-fauna of California, and general remarks on western Ornithology. < *The Scientific Monthly* (Toledo, Ohio), i, No. 1, Oct., 1875, pp. 2–13.

Based on the same material as that elaborated afterward in Clarence King's report, 1877, *q. v.*, with more regard to the popular aspects of the case.

1875. ROBERTS, T. S. New Birds from Minnesota. < *Forest and Stream*, v, Dec. 16, 1875, p. 292.

Remarks on rare species, and list of 18 spp. not enumerated by Dr. Hatch in his Catalogue of the Birds of Minnesota, 1874. This article was also printed in *The Scientific Monthly* for Feb., 1876, p. 231, *q. v.*

1875. ROBINSON, W. R. A List of Albino Birds [of North America]. < *Forest and Stream*, v, Dec. 30, 1875, p. 323.

1875. [SALVIN, O.] [Ornithological advices from Disco, Greenland, on affairs of the Arctic Expedition.] < *Ibis*, v, 3d series, 1875, pp. 520, 521.

1875. SAMUELS, E. A. The | Birds of New England | and | adjacent states: | . . . . . | With an appendix containing supplementary notes. | Sixth edition, revised and enlarged. | Boston: | Noyes, Holmes, and company, | 219, Washington Street. | 1875. 1 vol. 8vo. pp. i–vii, 1–591, col'd frontisp. (Quiscalus purpureus), many full-page uncolored woodcc. and others in text, and pll. i–iv of eggs.

Orig. ed. 1867. This ed. from the orig. stereos.; illustrations the same, with addition of the col'd frontisp. The Appendix, pp. 575–583, gives many species omitted from the orig. ed. There have been several editions of this work, all from the orig. stereos., and substantially the same, but differing in the illustrations and size of paper, one in small 4to, many colored plates additional to those of the regular editions. The "Appendix" was introduced soon after the first ed., perhaps in the 2d.

1875. SCLATER, P. L. Instructions for collecting and observing the Birds of Greenland. < *Instructions for Use of Sci. Exped. to Arct. Regions*, 1875, pp. 45, 46. (8vo, London, 1875.)

1875. SCOTT, G. C. Spring Birds and Fishes. < *Rod and Gun*, vi, April 17, 1875, p. 33.

1875. SNOW, F. H. Birds of Kansas. < *Observer of Nature*, ii, Mar. 24, 1875 (newspaper, not paged).

Adds 4 spp. to his various previous lists, and mentions several others as probable or possible additions to the avifauna of the State.

1875. SNOW, F. H. New Birds in Kansas. < *Am. Nat.*, ix, No. 8, Aug., 1875, p. 470.

Micropalama himantopus, Calidris arenaria, Aegiothus linaria, Dendrœca palmarum, Ampelis garrulus.

1875. SNOW, F. H. Birds of Kansas. < *Trans. Kans. Acad. Science for* 1874 (pamphlet, pub. separately from *Trans. State Board of Agric.*, with which formerly included), 1875, pp. 30, 31.

Of these 9 spp., 3 are additional to former lists, raising the number to 290. See 1875, 1874, 1873, 1872, SNOW, F. H.

1875. SNOW, F. H. A | Catalogue | of the | Birds of Kansas | contributed to the | Kansas Academy of Science | by | F. H. Snow, | Professor of Natural History and Meteorology, in the University | of Kansas, | at Lawrence. | — | Third Edition. | November, 1875. 8vo. pamph. pp. 14.

23 spp. and one var. added since the pub. of the 2d ed. in Oct., 1872. List now contains 295 spp.; the 23 additions would have increased the number to 305, but for reduction of several spp. to varr. 136 spp., known to breed, marked with asterisk.

1875. STEARNS, W. Birds Breeding on Penikese Island [Massachusetts]. < *Am. Nat.*, ix, No. 9, 1875, pp. 514, 515.

Annotated list of 14 spp.

1875. STEPHENS, F. A collector's rambles [in New Mexico]. < *Rod and Gun*, vi, June 5, 1875, p. 146; June 12, 1875, p. 171.

Birds observed in Sangre de Cristo Mountains and vicinity in March.

1875. TABER, E. B. The life of winter Birds. < *Forest and Stream*, v, Dec. 9, 1875, p. 275.

1875. [TILESTON, W. M.] Birds in extremis [through rigors of winter]. < *Forest and Stream*, iv, Mar. 4, 1875, p. 40.

1875. [TILESTON, W. M.] Spare the Birds. < *Forest and Stream*, iv, Mar. 25, 1875, p. 104.

1875. TREAT, [MRS.] MARY. Do Birds improve as architects? < *Harper's New Monthly Mag.*, li, pp. 127–130.

Answered affirmatively and cases cited from personal observation.

1875. WHEATON, J. M. The food of Birds as related to agriculture. < *Twenty-ninth Ann. Rep. Ohio State Board of Agric. for* 1874, (no date) 1875, pp. 561–578.

Also separately, 8vo, pp. 18, same title.—This is, in effect, a corrected and completed list of the birds of Ohio (the author's original list appeared in same publication for 1860), briefly annotated, and with the general food-regimen of each family given; being a well-conceived essay of much practical utility.

1875–77. "OVUM." Birds' Nests and Eggs. < *Oologist*, i, No. 1, Mar., 1875, p. 2; No. 2, Apr., 1875, pp. 9–11, with 2 figg.; No. 5, July, 1875, pp. 33, 34, 6 figg.; No. 6, Aug., 1875, pp. 41, 42, + suppl. sheet, for Sept., Oct., pp. 1, 2, figg. 1–4; No. 9, Nov., 1875, p. 59, + suppl. sheet; No. 10, Dec.,

1875–77. "OVUM."—Continued.

1875, p. 67, + suppl. sheet, with 5 figg.; No. 11, Jan., 1876, pp. 73–75; ii, No. 3, May, 1876, pp. 18, 19; No. 4, June, 1876, pp. 26, 27; No. 5, July, 1876, pp. 33, 34; No. 6, Aug., 1876, pp. 42, 43; No. 7, Sept., 1876, pp. 49, 50; No. 8, Oct., 1876, pp. 58, 59; Nos. 9, 10, Nov.–Dec., 1876, pp. 66, 67; No. 11, Jan., 1877, pp. 76, 77; No. 12, Feb., 1877, pp. 86, 87.

A series of descriptions of the nests and eggs of various North American birds, several of which are figured. My file of this "amateur" periodical is incomplete. The series continues with same major caption, over a different pseudonyme, "Avis", following articles being rather citable separately by their respective sub-heads.

1876. ABBOTT, C. C. Repetition of Nesting in Birds. < *Forest and Stream*, v, Jan. 6, 1876, p. 340.

List of species breeding twice in a season.

1876. ABBOTT, C. C. My February Field Notes. < *Forest and Stream*, vi, Mar. 23, 1876, pp. 99, 114.

Ornithological journal near Trenton, N. J.

1876. ABBOTT, C. C. March Field Notes—Birds [at Trenton, N. J.] < *Forest and Stream*, vi, April 20, 1876, p. 163.

1876. ABBOTT, C. C. Three months of Field Notes. < *Forest and Stream*, vii, Aug. 10, 1876, pp. 3, 20.

Ornithological field-notes made at Trenton, N. J. Remarks on influences affecting migrations.

1876. "AGATE." Game [Birds] in Western New York. < *Forest and Stream*, vi, Feb. 17, 1876, p. 18.

1876. ALLEN, C. A. Notes from California. < *Forest and Stream*, vii, Aug. 10, 1876, p. 4.

Arrival and nesting of birds at Nicasio, Marin County.

1876. ALLEN, MRS. C. A. [List of 6 Californian birds nesting on a single tree, with details.] < *Forest and Stream*, v, Feb. 3, 1876, p. 404.

1876. ALLEN, J. A. The availability of certain Bartramian names in ornithology. < *Am. Nat.*, x, No. 1, 1876, pp. 21–29.

Adverse to Dr. Coues's views, *Pr. Phila. Acad.*, 1875, pp. 338–358.

1876. ALLEN, J. A. Bartramian Names again: An Explanation. < *Am. Nat.*, x, No. 3, 1876, pp. 176, 177.

The last word in this short and amiable discussion.

1876. ALLEN, J. A. Progress in Ornithology in the United States during the last Century. < *Am. Nat.*, x, No. 9, 1876, pp. 536–550.

A very valuable historical digest and commentary. It is one of the "Centennial" reports of progress in zoology which the *Naturalist* published this year.

1876. A[LLEN], J. A. Birds of Kansas. < *Bull. Nutt. Ornith. Club*, i, No. 2, July, 1876, pp. 47, 48.

Notice of F. H. Snow's later catalogue of Kansas birds.

1876. A[LLEN], J. A. Extinct Birds with teeth. < *Bull. Nutt. Ornith. Club*, i, No. 2, July, 1876, p. 49.

Note on Marsh's papers on *Ichthyornis*, *Apatornis*, *Hesperornis*, and *Lestornis*, in *Am. Journ. Sci.*, 1875 and 1876.

1876. A[LLEN], J. A. Life-Histories of the Birds of Eastern Pennsylvania. < *Bull. Nutt. Ornith. Club*, i, No. 2, July, 1876, pp. 49, 50.

Review of T. G. Gentry's work of that name, vol. I.

1876. ALLEN, J. A. Decrease of Birds in Massachusetts. < *Bull. Nutt. Ornith. Club*, i, No. 3, Sept., 1876, pp. 53–60.

Statement of the case, and discussion of the causes.

1876. A[LLEN], J. A. The Birds of Ritchie County, West Virginia. < *Bull. Nutt. Ornith. Club*, i, No. 3, Sept., 1876, p. 72.

Brief note on Brewster's paper, *Ann. Lyc. N. Y.*, xi, 129.

1876. ALLEN, J. A. Geographical variation in the number and size of the eggs of [certain North American] birds. < *Bull. Nutt. Ornith. Club*, i, No. 3, Sept., 1876, pp. 74, 75.

1876. A[LLEN], J. A. Birds of Southwestern Mexico. < *Bull. Nutt. Ornith. Club*, i, No. iv, Nov., 1876, p. 93.

Note on G. N. Lawrence's paper, *Bull. U. S. Nat. Mus.*, No. 4, 1876, *q. v.*

1876. A[LLEN], J. A. Jordan's Manual of Vertebrate Animals. < *Bull. Nutt. Ornith. Club*, i, No. iv, Nov., 1876, pp. 93, 94.

Review of the work.

1876. [ALLEN, J. A.] Ornithological Calendar for March. < *Forest and Stream*, vi, Mar. 16, 1876, p. 84.

1876. ALLEN, J. A. Send in the reports. < *Forest and Stream*, vi, March 30, 1876, p. 115.

Importance of securing data on migrations and habits of birds, and suggestions therefor.

1876. ALLEN, J. A. Calendar [for birds in Massachusetts, March 20–31]. < *Forest and Stream*, vi, March 30, 1876, p. 116.

1876. ALLEN, J. A. Calendar [of birds of Massachusetts for April 1–20]. < *Forest and Stream*, vi, April 6, 1876, p. 132.

1876. ALLEN, J. A. On the Decrease of Birds in the United States. < *Penn Monthly*, Dec., 1876, pp. 931–944.

Refers especially to *Alca impennis*, *Cupidonia cupido*, *Meleagris gallopavo*, *Conurus carolinensis*, *Hylotomus pileatus*, *Melanerpes erythrocephalus*, *Grus* spp., *Cygnus* spp., *Pelecanus* spp., *Laridæ*, *Grallæ*, *Ectopistes migratorius*, *Quiscalus purpureus*, *Agelæus phœniceus*, and in more general terms to various other species.

1876. [ANON.] Rare birds for Canada. < *Forest and Stream*, vii, Nov. 9, 1876, p. 212.

Pelican (sp.?) and Sand-hill Crane at London, Ontario.

1876. [ANON.—G. B. GRINNELL.] Nuttall Bulletin [vol. I, No. 4, reviewed]. < *Forest and Stream*, vii, Dec. 28, 1876, p. 327.

1876. [ANON.] Report upon Geographical and Geological Explorations and Surveys in charge of First Lieut. Geo. M. Wheeler, Corps of Engineers U. S. A., Chap. III, Vol. V, Zoology, Washington. < *Rod and Gun*, viii, Aug. 26, 1876, p. 344.

Review of the ornithology of Arizona and vicinity, by H. W. Henshaw.

1876. [ANON.] The Traffic in Birds. < *Rod and Gun*, ix, Dec. 16, 1876, p. 172.

Statements from the *New York World* concerning the importation of foreign singing and fancy birds to the United States.

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vi, Feb. 10, 1876, p. 3.

Eagles on the Hudson river; Pine Grosbeak in confinement; White Pelican common in Florida; Gulls as scavengers.

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vi, March 16, 1876, p. 84.

Ampelis garrulus; bird arrivals in Berks Co., Pa.; Gambel's and Massena Quails.

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vi, March 23, 1876, p. 99.

Spring birds at Salem, Mass., Yonkers, N. Y., Waterville, N. Y., and Peotone, Ill.

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vi, April 6, 1876, p. 132.

Albinos; Bluebird and Meadow Lark in Louisiana.

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vi, April 13, 1876, p. 148.

Woodcock breeding in Duplin Co., N. C.; March birds, including Whippoorwill, at Glen's Falls, and at Niagara Falls, N. Y.

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vi, April 27, 1876, p. 180.

Spring birds in New England; albino Robin and Sora Rail.

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vi, May 18, 1876, p. 233.

Drumming of Snipe; habits of Chimney Swifts.

1876. ———. Letters from Ornithologists. < *Forest and Stream*, vi, May 18, 1876, p. 233; June 1, 1876, p. 266.

Dendrœca coronata in Eastern Mass. (ARTHUR F. GRAY); spring migrants at Montpelier, Vt. (W. A. BRIGGS), and at Peotone, Ill. (D. H. EATON); ornithology of Rogue Island, Me. (G. LONGFELLOW).

1876. ———. Letters from Ornithologists. < *Forest and Stream*, vi, June 1, 1876, p. 266.

Warblers in Eastern Massachusetts (CHAS. A. HOUGHTON); spring birds at Newport, R. I. (J. S. COULAND = *Howland*), at Gainesville, Texas (G. H. RAGSDALE), and at Lake City, Minn. (D. C. ESTES).

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vi, June 15, 1876, p. 300.

Accidental death of birds; "Rusty-headed Fisher" = Female Gooseander?

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vi, July 6, 1876, p. 355.

Birds feeding on maggots; "White Crane" at Lynchburg, Va.; Toeless Robin.

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vi, July 20, 1876, p. 387.

Bird caught in a mussel; Black-throated Buntings, etc., in Illinois; Upland Plover breeding at Gainesville, Texas; sex of Pigeons; habits of Catbird.

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vii, Oct. 12, 1876, p. 148.

Gulls at Hornellsville, N. Y.; Bald Eagle weighing 18 pounds; Red-headed Woodpeckers in Northern New Jersey; Wood Ducks reared in the barn-yard.

1876. ———. Notes from our Correspondents. < *Forest and Stream*, vii, Oct. 19, 1876, p. 164.

Collurio borealis seizing its prey with its talons; *Zenædura carolinensis* at Machias, Me., Oct. 9, etc.

1876. "Archer." [G. A. Stockwell.] Game of Michigan. Wild Turkey.—Meleagris gallipavo, Meleagris mexicana. < *Rod and Gun*, ix, Nov. 4, 1876, p. 65.

1876. Audubon, Miss [Maria R.] Reminiscences of Audubon, by a Granddaughter. < *Scribner's Monthly*, xii, 1876, pp. 333–338.

1876. Bailey, H. B. Notes on Birds found breeding on Cobb's Island, Va. Between May 25th and May 29th, 1875. < *Bull. Nutt. Ornith. Club*, i, No. 1, 1876, pp. 24–28.

21 spp., mostly waders and swimmers.

1876. Baird, S. F. Engineer Department, U. S. Army. | = | Report | of | Explorations | across the | Great Basin of the Territory of Utah | for a | direct wagon-route from Camp Floyd to Genoa, in Carson Valley, | in 1859, | by | Captain J. H. Simpson, | Corps of Topographical Engineers, U. S. Army, | [now Colonel of Engineers, Bvt. Brig. Gen., U. S. A.] | made | by authority of the Secretary of War, and under instructions from Bvt. Brig. Gen. A. S. Johnston, | U. S. Army, commanding the Department of Utah. | — | Washington: | Government Printing Office. | 1876. 1 vol. 4to. pp. 518, maps and pll. > Appendix K. List of Birds collected by Charles S. McCarthy, Taxidermist. Classified by Prof. Spencer F. Baird. pp. 375–381.

Perfunctory; 114 spp., with number of specimens procured and localities.

1876. Bicknell, E. P. A comparison of winter Birds. < *Forest and Stream*, vi, April 6, 1876, p. 133.

1876. Bicknell, E. P. Early spring [Birds, etc.] on the Hudson. < *Forest and Stream*, vi, April 13, 1876, p. 149.

1876. Bicknell, E. P. Field Notes [on Birds, etc.] at Riverdale [N. Y.] < *Forest and Stream*, vi, May 18, p. 233.

1876. Bicknell, E. P. The birds of our suburbs [*i. e.*, at Riverdale-on-Hudson, N. Y.] < *Forest and Stream*, vi, July 20, 1876, p. 386. See p. 402.

Ornithological journal, May 1–31.

1876. Boies, A. H. [Additions to a catalogue of] Michigan birds. < *Rod and Gun*, vii, Jan. 15, 1876, p. 248.

For the *Catalogue*, see 1875, Boies, A. H.

1876. Brewer, T. M. Birds of New England. < *Bull. Nutt. Ornith. Club*, i, No. iv, Nov., 1876, pp. 89–93.

A defence of his catalogue against the criticisms of "H. A. P[urdie]", *tom. cit.*, p. 72.

1876. Brewster, W. On the occurrence of certain Birds in the New England states. < *Bull. Nutt. Ornith. Club*, i, No. 1, 1876, pp. 17–20.

Junco oregonus, Corvus ossifragus, Vireo philadelphicus, Tringa bairdi, Philomachus pugnax.

1876. B[rewster], W. Ornithology of the Wheeler Expedition. < *Bull. Nutt. Ornith. Club*, i, No. 3, Sept., 1876, pp. 70, 71.

Review of Henshaw's ornithological papers in the publications of the expedition mentioned.

1876. BRIGGS, W. A., *and* "R." Two letters from northern Vermont. < *Forest and Stream*, vi, Mar. 23, 1876, p. 100.

List of resident and winter birds at Montpelier, Vt., including *Buteo pennsylvanicus*; notes from Addison Co., Vt., with editorial remarks.

1876. BROWN, N. C. Variable Abundance of Birds at the same Localities [in North America] in different years. < *Bull. Nutt. Ornith. Club*, i, No. iv, Nov., 1876, pp. 95, 96.

1876. [BROWNE, C. F.] Local nomenclature. < *Forest and Stream*, vii, Nov. 9, 1876, p. 212. See pp. 245, 276.

Gunner's names for sea-birds at Plymouth Bay, Mass., with editorial remarks.

1876. BRO[W]NE, F. C. [Cf. p. 212.] Gunner's Names [for sea-birds and wild fowl on the Massachusetts coast]. < *Forest and Stream*, vii, Nov. 23, 1876, p. 245. See pp. 212, 276.

1876. BURROUGHS, J. Notes from the North River [at Esopus, N. Y.]. < *Forest and Stream*, vi, April 20, 1876, p. 164.

1876. BURROUGHS, J. A Bird Medley. < *Scribner's Monthly*, xii, 1876, pp. 479–489; nine illustrations [by Miss Fidelia Bridges].

Poetic treatment of some birds of the Northern States.

1876. CARPENTER, W. L. Field Notes on the Natural History of the Big Horn Mountains [Montana]. < *Forest and Stream*, vii, Nov. 2, 1876, p. 196.

1876. C. F. P. Birds of Southern Pennsylvania. < *Forest and Stream*, vi, March 9, 1876, p. 67.

1876. "CILIBILI." [WM. GOODYER.] Birds and late snow storms. < *Forest and Stream*, vi, April 20, 1876, p. 164.

1876. COLVIN, V. The winter fauna of Mt. Marcy. < *Rod and Gun*, viii, April 8, 1876, p. 22.

From Report to State Legislature of Survey of the Adirondack Wilderness.

1876. COOPER, J. G. Californian Garden Birds. < *Am. Nat.*, x, No. 2, 1876, pp. 90–96.

Notes on the habits of numerous species observed near San Francisco.

1876. COPE, E. D. On a Gigantic Bird from the Eocene of New Mexico [Diatryma gigantea]. < *Proc. Acad. Nat. Sci. Phila. for April* 1876.

1876. COUES, E. An Account of the various Publications relating to the Travels of Lewis and Clarke, with a Commentary on the Zoological Results of their Expedition. < *Bull. U. S. Geol. Surv.*, No. 6, 2d ser., Feb. 8, 1876, pp. 417–444.

2.—Birds, pp. 439–444. Identification of the species described by these authors.

1876. COUES, E. Reply to Mr. J. A. Allen's "Availability of certain Bartramian names in Ornithology." < *Am. Nat.*, x, No. 2, 1876, pp. 98–102.

Maintaining the position he assumed in his *Fasti Ornithologiæ Redivivi*, against Allen, in *Am. Nat.*, 1876, pp. 21–29.

1876. COUES, E. Unusual Nesting Sites of the Night Hawk and Towhee Bunting. < *Am. Nat.*, x, No. 4, 1876, p. 239.

Chordiles popetue on a roof; *Pipilo erythrophthalmus* in a tree.

1876. COUES, E. The Destruction of Birds by Telegraph Wire. < *Am. Nat.*, x, No. 12, 1876, pp. 734–736.

Detailed account, from observations in Colorado. The article reappears, under various editorial guises and abstracts, in numberless newspapers.

1876. COUES, E. On the Number of Primaries in Oscines. < *Bull. Nutt. Ornith. Club*, i, No. 3, Sept., 1876, pp. 60–63.

Results of examination of many supposed nine-primaried birds, in which a rudimentary first primary, making ten in all, was found.

1876. COUES, E. A correction. < *Forest and Stream*, vi, Feb. 24, 1876, p. 36.

Of a statement respecting the "Birds of the Colorado", *loc. cit.*, p. 20.

1876. COUES, E. Mr. Gentry's Book about Birds. < *Rod and Gun*, viii, April 29, 1876, p. 71.

Review of *Life-Histories of the Birds of Eastern Pennsylvania*, vol. I.

1876. COUES, E. Dr. Coues on "Partridge", "Quail", etc. < *Rod and Gun*, ix, Nov. 11, 1876, p. 88.

Systematic relations *inter se*, scientific names, and habitats of American *Gallinæ*.

1876. COVERT, A. B. A Letter of Promise. < *Forest and Stream*, vi, March 2, 1876, p. 52.

Spring birds in Michigan; ability of birds to foresee atmospheric changes.

1876. COVERT, A. B. Birds of Lower Michigan. < *Forest and Stream*, vi, 1876, pp. 99, 132, 163, 214, 266, 318, 354.

Catalogue, with annotations, of birds observed in the Lower Peninsula of Michigan during several years.

1876. DEANE, RUTHVEN. Albinism and melanism among North American birds. < *Bull. Nutt. Ornith. Club*, i, No. 1, 1876, pp. 20–24.

Commentary on the many instances of this affection observed by the writer.

1876. DE KAY, CHARLES. Winter Sunshine. < *Scribner's Monthly*, xi, 1875–76, p. 749.

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1876. EATON, D. H. Prairie Ornithology [at Peotone, Ill.]. < *Forest and Stream*, vi, June 15, 1876, p. 301.

1876. EATON, D. H. Egg collecting in Illinois. < *Forest and Stream*, vi, June 29, 1876, p. 337.

1876. [EDITORIAL.] The Nuttall Ornithological Club. < *Bull. Nutt. Ornith. Club*, i, No. 2, July, 1876, pp. 29–32.

Historical sketch, including list of the principal papers, by members of the club, published elsewhere (chiefly in the *American Sportsman*) prior to establishment of the *Bulletin*.

1876. [EDITORIAL.] Correction [of article "Birds of our Suburbs", p. 386]. < *Forest and Stream*, vi, July 27, 1876, p. 402.

1876. ESTES, D. C. Winter notes from Lake Pepin [Minn.]. < *Forest and Stream*, vi, April 20, 1876, 164.

1876. FISH, GEORGE T. Birds and their uses. < *Rod and Gun*, viii, July 29, 1876, p. 281.

Read before the Western New York Horticultural Society.

1876. FISHER, A. K. Small Birds caught by the Burdock. < *Am. Nat.*, x, No. 4, 1876, pp. 239, 240.

Chrysomitris tristis, *Dendrœca coronata*.

1876. FOWLER, H. G. Birds of Central New York. < *Forest and Stream*, vi, Apr., 1876, p. 180; May 18, p. 233; June 8, p. 284; June 29, p. 337; ——, p. 402; vii, Aug. 24, 1876, p. 36; Aug. 31, p. 52; Sept. 14, p. 84; Nov. 16, p. 230.

List of 150 spp., of Cayuga, Seneca, and Wayne Cos., N. Y. The first instalment is ascribed by error to "H. W. Candee". See 1877, RATHBUN, F. R.

1876. FOWLER, H. G. Additional Birds of Central New York. < *Forest and Stream*, Oct. 26, 1876, p. 180.

Adding 19 spp. to above list.

1876. FOX, W. H. Three migrations [1874–5–6, at Hollis, New Hampshire] compared [in a table]. < *Forest and Stream*, vi, July 6, 1876, p. 354.

1876. FULLER, A. R. Spring [arrivals of birds] at Meacham Lake, New York. < *Forest and Stream*, vi, June 15, 1876, p. 301.

1876. GILBERT, J. B. The rarer birds of Western New York. < *Forest and Stream*, vii, Dec. 28, 1876, p. 324.

Remarks on 35 spp. of birds of Yates Co., New York.

1876. GLADWIN, CHARLES O. [Notes on some] Birds of Southern Connecticut. < *Forest and Stream*, vi, March 30, 1876, p. 116.

1876. GRAY, ARTHUR F. Resident [land] Birds [25 spp.] of Danvers [Mass.] < *Forest and Stream*, vi, April 27, 1876, p. 181.

1876. [GRINNELL, G. B.] [Notice of a "Catalogue of the Birds of Southwestern Mexico, collected by F. E. Sumichrast"; in Bulletin of the National Museum, No. 4.] < *Forest and Stream*, vii, Nov. 23, 1876, p. 245.

1876. HOFFMAN, W. J. Habits of Western [North American] Birds. < *Am. Nat.*, x, No. 4, 1876, pp. 238, 239.

Buteo swainsoni, *Stellula calliope*, etc., in California and Nevada.

1876. HOLBERTON, W. Local names of bay-birds [Limicolæ]. < *Forest and Stream*, vii, Sept. 7, 1876, p. 68.

1876. INGERSOLL, E. Three April Birds [Sialia sialis, Troglodytes aëdon, Zenædura carolinensis]. < *Appleton's Journal*, xv, April, 1876, p. 526.

1876. [INGERSOLL, E.] An Invitation [to observe and record daily occurrences in natural history, mainly in ornithology]. < *Forest and Stream*, vi, Feb. 17, 1876, p. 19. See p. 37.

1876. [INGERSOLL, E.] Birds of Arizona. < *Forest and Stream*, vi, Feb. 17, 1876, p. 20.

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1876. [INGERSOLL, E.] [Notice of the work on the "Birds of the Colorado", to be written by Dr. Elliott Coues.] < *Forest and Stream*, vi, Feb. 17, 1876, p. 20. See pp. 36, 387.

1876. [INGERSOLL, E.] Our "Invitation" heard from. < *Forest and Stream*, vi, Feb. 24, 1876, p. 36.

Comments and criticisms by S. F. Baird, C. C. Abbott, and others, upon the text and proposal in the article "An Invitation", on p. 19. Information upon migrations of birds in Central New Jersey.

1876. [INGERSOLL, E.] Recent pamphlets. < *Forest and Stream*, vi, Mar. 9, 1876, p. 67.

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1876. [INGERSOLL, E.] [Winter birds of Eastern Maine.] < *Forest and Stream*, vi, March 9, 1876, p. 68.

1876. [INGERSOLL, E.] [Suggestions as to] Formulating Field Notes. < *Forest and Stream*, vi, April 6, 1876, p. 132.

1876. [INGERSOLL, E.] Schoolboys as naturalists. < *Forest and Stream*, vi, April 20, 1876, p. 163.

1876. [INGERSOLL, E.] At Home with the Birds. < *Forest and Stream*, vi, May 11, 1876, p. 214.

Review of vol. I, *Life-Histories of the Birds of Eastern Pennsylvania*, by Thomas G. Gentry.

1876. [INGERSOLL, E.] The Nuttall Club. < *Forest and Stream*, vi, May 25, 1876, p. 250.

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1876. [INGERSOLL, E.] New Work by Dr. Coues. < *Forest and Stream*, vi, July 20, 1876, p. 387. See pp. 20, 36.

Advance notice of the *Birds of the Colorado*.

1876. [INGERSOLL, E.] Dr. Hayden and Ornithology. < *Forest and Stream*, vi, July 20, 1876, p. 390.

Sketch of ornithological results from the U. S. Geological and Geographical Survey of the Territories.

1876. [INGERSOLL, E.] Wheeler's "Birds". < *Forest and Stream*, vi, July 27, 1876, p. 402.

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1876. [INGERSOLL, E.] A key to our Shore Birds [Limicolæ]. < *Forest and Stream*, vi, Aug. 3, 1876, p. 417; and vii, Aug. 10, 1876, p. 3.

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1876. [INGERSOLL, E.] Ornithology, etc. < *Forest and Stream*, vii, Aug. 17, 1876, p. 23.

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1876. INGERSOLL, E. The Migrations of Birds. < *Forest and Stream*, vii, Sept. 14, 1876, p. 84.

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1876. [INGERSOLL, E.] A second "Birds of New England". < *Forest and Stream*, vii, Oct. 5, 1876, p. 132.

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1876. [INGERSOLL, E.] Two Lists of Birds. < *Forest and Stream*, vii, Oct. 19, 1876, p. 164.

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1876. INGERSOLL, E. Something About Birds. < *Scribner's Monthly*, xii, 1876, pp. 689–693, figg. 1–17.

Features of bird-character generally; illustrations taken from Sanborn Tenney's *Zoology*, and Baird, Brewer, and Ridgway's *History of North American Birds*.

1876. I[NGERSOLL], MRS. E. Kinglets and Warblers in captivity. < *Forest and Stream*, v, Jan. 6, 1876, p. 340.

1876. JONES, WM. L. March Memoranda [from St. Clair Co., Ill.]. < *Forest and Stream*, vi, June 29, 1876, p. 338.

1876. JONES, WM. L. April Birds [at Lebanon] in Illinois. < *Forest and Stream*, vi, Aug. 3, 1876, p. 418.

1876. JORDAN, D. S. Manual | of the | Vertebrates | of the | Northern United States, | including | the District east of the Mississippi River, | and north of | North Carolina and Tennessee, exclusive | of marine species. | By | David Starr Jordan, M. S., M. D. | Professor of Natural History in N. W. C. University, and in Indiana | State Medical College. | — | Chicago: | Jansen, McClurg & Company. | 1876. 1 vol. 12mo. pp. 342.

"This book has been written to give collectors and students who are not specialists, a ready means of identifying the families, genera and species of our Vertebrate Animals. In deference to the uniform experience of botanists, and in view of the remarkable success achieved by Dr. COUES, in the application of the method to Ornithology, the author has adopted the system of artificial keys." (*Extract from Preface.*)—Birds are treated at pp. 36–156, with useful artificial keys to the higher groups, analyses of the genera, and concise diagnoses of the species. It has proven a very useful and valuable help to the student, and has already passed to a 2d ed., 1878, *q. v.*

1876. JOUY, P. L. Birds of the District of Columbia. < *Field and Forest*, i, No. 10, Mar., 1876, pp. 79, 80.

Nominal list of 38 "common permanent residents" and 29 "common winter residents". Article ascribed to R. W. Shufeldt; error corrected *op. cit.*, ii, No. 1, p. 18.

1876. KEYES, F. H. May Songsters at Springfield [Mass.]. < *Forest and Stream*, vi, June 29, 1876, p. 338.

1876. KUMLEIN, A. J. Unusual Accidents to Birds. < *Field and Forest*, ii, No. 6, Dec., 1876, p. 106.

Chordeiles popetue with a beetle (*Lachnosterna*) which had worked partly through the gullet and skin of the neck.—Pigeon impaled on a beech twig.

1876. LAWRENCE, G. N. Birds | of | Southwestern Mexico. | Collected by Francis E. Sumichrast | for the | United States National Museum. | — | Prepared by | George N. Lawrence. | — | Washington: | Government Printing Office. | 1876. = *Bull. U. S. Nat. Mus.*, No. 4. 8vo pamph. Cover and pp. 56.

There is the cover-title, the full-page title (above given), and a third one, all worded differently.—An important paper, treating of 321 spp., with author's critical and collector's field-notes, preceded by Sumichrast's "Notes on the geographical division of the birds in the Sithmus [*lege* Isthmus] of Tehuantepec". The novelties contained in this splendid collection were earlier published elsewhere.

1876. LE BARON, J. F. The naturalist and sportsman in Florida. < *Rod and Gun*, ix, 1876, pp. 21, 29, 53, 69, 83, 97, 113.

1876. LONGFELLOW, G. A persecuted Ornithologist. < *Forest and Stream*, vi, June 22, 1876, p. 319.
Enormous abundance of sea-birds in Englishman's Bay, Maine. See p. 233.

1876. MARSH, O. C. Notice of New Odontornithes. < *Am. Journ. Sci.*, (3), xi, 1876, pp. 509–511.
Not seen.—*Lestornis crassipes*, g. sp. n., p. 509; *Hesperornis gracilis*, p. 510, sp. n.; *Ichthyornis (?) victor*, p. 511, sp. n.

1876. MARSH, O. C. Note sur de nouveaux Odontornithes. < *Gervais' Journ. de Zool.*, v, 1876, pp. 304–306.
Not seen—from *Am. Journ. Sci.*, (3), xi, pp. 509–511, *q. v.*

1876. MAYNARD, C. J. Variation in the breeding habits of certain Birds [of Florida]. < *Rod and Gun*, viii, Aug. 12, 1876, p. 314.

1876. MERRIAM, C. H. < Passerculus princeps and Parus hudsonicus in Connecticut. < *Bull. Nutt. Ornith. Club*, i, No. 2, July, 1876, p. 52.

1876. MERRILL, J. C. Notes on Texan Birds. < *Bull. Nutt. Ornith. Club*, i, No. iv, Nov., 1876, pp. 88, 89.
I. *Molothrus æneus, Nyctidromus albicollis, Pyrrhophæna riefferi, Parra gymnostoma, Podiceps dominicus*, from Fort Brown, Texas—all but the last new to the U. S. fauna. II. On the breeding habits, previously unknown, of two species of North American birds (*Embernagra rufivirgata, Xanthura luxuosa*).

1876. MINOT, H. D. The Summer birds of the White Mountain Region. < *Am. Nat.*, x, No. 2, 1876, pp. 75–80.
Running commentary on various species of that part of New Hampshire.

1876. MORRIS, R. T. Reflections upon reflections. < *Forest and Stream*, vi, May 1, 1876, p. 197.
Adverse criticism of Theo. Jasper's book, 1874–78, *q. v.*

1876. MORRIS, R. T. Game Birds of Connecticut. < *Forest and Stream*, vii, Sept. 28, 1876, p. 116.
53 spp., with notes upon relative abundance.

1876. MORRIS, R. T. Local nomenclature [for wildfowl on the Connecticut coast]. < *Forest and Stream*, vii, Dec. 7, 1876, p. 276. See pp. 212, 245.

1876. NELSON, E. W. Additions to the Avi-fauna of Illinois, with notes on other species of Illinois Birds. < *Bull. Nutt. Ornith. Club*, i, No. 2, July, 1876, pp. 39–44.
15 spp., fully annotated, with further notes on 14 other spp. still imperfectly known as birds of Illinois.

1876. NELSON, E. W. Birds observed in the vicinity of Oakland, Cal., December 23, 1872. < *The Scientific Monthly* (Toledo, Ohio), vol. i, No. 5, Feb., 1876, pp. 232–234.
Running commentary on the varied results of one day's observations.

1876. PARKER, S. S. A report [of spring Birds] from New Hampshire. < *Forest and Stream*, vi, April 27, 1876, p. 180.

1876. PHILLIPS, C. H. The fauna of Nebraska [including game birds]. < *Forest and Stream*, vi, June 8, 1876, p. 284.

1876. PIERCE, M. P. Scarcity of Birds in New Jersey. < *Forest and Stream*, vi, Mar. 16, 1876, p. 84.

1876. P[URDIE], H. A. Birds of New England. < *Bull. Nutt. Ornith. Club*, i, No. 3, Sept., 1876, pp. 72, 73.

Critical review of T. M. Brewer's Catalogue, *Pr. Bost. Soc.*, xvii, pp. 436–454, noting some of the required additions and making many necessary corrections.

1876. RAGSDALE, G. H. Texan Ornithology. < *Forest and Stream*, vi, July 13, 1876, p. 370.

Journal from April 24 to June 5 of ornithological occurrences at Gainesville, Cooke Co., Texas.

1876. RIDGWAY, R. Ornithology of Guadeloupe Island based on notes and collections made by Dr. Edward Palmer. < *Bull. U. S. Geol. Surv. Terr.*, vol. ii, 1876, pp. 183–195.

The land birds ascertained to inhabit the island during the breeding season are *Regulus calendula obscurus*, p. 184; *Salpinctes obsoletus guadeloupensis*, p. 185; *Thryomanes brevicauda*, p. 186; *Carpodacus amplus*, p. 187; *Junco insularis*, p. 188; *Pipilo maculatus consobrinus*, p. 189; *Colaptes mexicanus rufipileus*, p. 191; *Polyborus lutosus*, p. 192—all new spp. or varr., excepting the *Polyborus*, which had just before been described (*op. cit.*, 2d ser., No. 6, 1876, p. 459). "Guadeloupe" (so spelled) lies off the coast of Lower California, and must not be confounded with an Antillean island of same name and similar orthography.

1876. ROBERTS, T. S. Winter rarities in Minnesota. < *Forest and Stream*, vi, April 13, 1876, p. 148.

Hesperiphona vespertina, Carpodacus purpureus, Pinicola enucleator, Bucephala americana.

1876. ROBERTS, T. S. A list of some Birds observed in the vicinity of Minneapolis, Minn., not enumerated in Dr. Hatch's list. < *The Scientific Monthly* (Toledo, Ohio), vol. i, No. 5, Feb., 1876, p. 231.

Annotated list of 20 spp., communicated by Mr. Ridgway.

1876. ROBINSON, R. E. Spring birds of [Addison County] Vermont. < *Forest and Stream*, vi, June 22, 1876, p. 318.

1876. SMITH, G. AUG. Birds of Fort Wayne, Ind[iana]. < *Forest and Stream*, vi, April 13, 1876, p. 148.

50 spp. observed in winter during 16 years. There are some glaring errors; as, *Glaucidium gnoma* for *Nyctale acadica*.

1876. SNOW, F. H. New Kansas Birds. < *Observer of Nature* (newspaper), iii, No. 6, April 26, 1876.

Adds 11 spp. to the fauna of the State, among them *Myiadestes townsendi*, *Coturniculus lecontii*, and *Gymnokitta cyanocephala*.

1876. "SPECULATOR." [ROBERT T. MORRIS.] Birds resident at New Haven. < *Forest and Stream*, vi, March 2, 1876, p. 52.

1876. "SPECULATOR." [ROBERT T. MORRIS.] Effect of cold on small Birds. < *Forest and Stream*, vi, March 30, 1876, p. 115.

1876. [SPERA, W. H.] The coming of the Birds. < *Forest and Stream*, vi, March 2, 1876, p. 52.

List of dates of arrivals of birds at Ephrata, Pa., by W. H. Spera; quoted from Ephrata *Times*.

1876. STEVENS, W. G. Bird arrivals on the Harlem [in April]. < *Forest and Stream*, vi, May 11, 1876, p. 215.

1876. "TEAL." [R. L. NEWCOMB.] The Massachusetts coast. < *Forest and Stream*, vi, Aug. 3, 1876, p. 417.

Ornithological diary, March 9 to May 17.

1876. THOMPSON, [J.] M. Some of our game-birds. < *Appleton's Journ.*, new ser., i, 1876, pp. 481–490, 12 illustrations.

1876. THOMPSON, [J.] M.—Continued.

These spirited woodcuts also accompanied a series of brief articles on game-birds (anonymous) in *Appleton's Almanac* for 1869. This annual, published in small 4to, for 1869, 1870, and 1871, contained many woodcuts of birds and much pleasant descriptive matter, having, however, little ornithological interest, although generally accurate.

1876. WARREN, T. R. Bay Shooting. < *Scribner's Monthly*, xiii, 1876, pp. 145–159; fifteen illustrations.

Humorous account of hunting sea-shore fowl.

1876. WHEELER, W. B. A Maryland calendar. < *Forest and Stream*, vi, April 27, 1876, p. 181.

Spring arrivals at Boonsboro, Md.

1876–77. GENTRY, T. G. Life-Histories of the Birds of Eastern Pennsylvania, by Thomas G. Gentry, [etc.] In two volumes. Vol. I. Philadelphia: published by the author. 1876. Vol. II. Salem, Mass. The Naturalists' Agency. 1877. Sm. 8vo. Vol. I, pp. xvi, 399. Vol. II, 4 p. ll., pp. 336.

The typography of the title differs in the two vols. Though announced in two vols., the second vol. only carries the subject through the land-birds, and another is expected. In spite of the literary execution, these "Life-Histories" are an acceptable contribution, being especially full and important on the subject of the food of the birds, inventories of the contents of the stomach being given in most cases.

1876–77. WILSON, A., *and* BONAPARTE, C. L. American Ornithology . . . by Sir William Jardine. London: 1876. New York: J. W. Bouton, 1877. 3 vols. 4to.

I gather from some trade-lists that there has been a reissue, as above barely indicated, of this edition—the "Jardine"—but I have not seen a copy.

1877. ABBOTT, C. C. Glimpses of Mind in Birds. < *Am. Nat.*, xi, No. 5, 1877, pp. 276–286.

Said to be furnished to the writer by certain N. A. birds.

1877. "AHWAHSOOSE." Our winter visitors [among birds]. < *Forest and Stream*, viii, May 3, 1877, p. 191.

1877. ALDRICH, C. Destruction of Birds by Telegraph Wires. < *Am. Nat.*, xi, No. 11, 1877, pp. 686, 687.

Further evidence, in case of *Cupidonia cupido*. *Cf. Amer Nat.*, x, 1876, p. 734.

1877. A[LLEN], J. A. Californian Ornithology. < *Bull. Nutt. Ornith. Club*, ii, No. 3, July, 1877, p. 76.

Review of J. G. Cooper's paper, *Proc. Cal. Acad.*, 1876 (separates dated Dec. 5, 1875).

1877. A[LLEN], J. A. McCauley's Notes on Texan Ornithology. < *Bull. Nutt. Ornith. Club*, ii, No. 3, July, 1877, pp. 76, 77.

Review of paper in *Bull. U. S. Geol. Surv. Terr.*, iii, No. 3, pp. 655–695, May 15, 1877.

1877. ALLEN, J. A. Occurrence of the Western Nonpareil [Cyanospiza versicolor] and Berlandier's Wren [Thryothorus ludovicianus var. berlandieri] at Fort Brown, Texas. < *Bull. Nutt. Ornith. Club*, ii, No. 4, Oct., 1877, pp. 109, 110.

1877. ALLEN, J. A. The Influence of physical Conditions in the Genesis of Species. < *Radical Review*, i, May, 1877, pp. 108–140.

Devoted largely to geographical variation in North American mammals and birds (pp. 121–126 devoted exclusively to birds, with other references *passim*), giving a general *résumé* of the subject.

1877. [ANON.] Recent Ornithological Papers. < *Am. Nat.*, xi, 1877, pp. 615–617.

Reviews Nelson's papers on Illinois Birds in *Bull. Essex Inst.*, viii, 1877, pp. 90–155; ix, pp. 32–65; McCauley's on Texan Birds, in *Bull. U. S. Geol. Surv. Terr.*, iii, 1877, pp. 655–695, and others.

1877. [ANON.] [Review of the "Nuttall Bulletin" for January, 1877.] < *Forest and Stream*, viii, Feb. 8, 1877, p. 10.

1877. [ANON.—R. F. BOISEAU.] Our Washington Letter, [etc.] < *Forest and Stream*, viii, May 31, 1877, p. 267.

List, with remarks, of birds of District of Columbia, derived from Coues and Prentiss's *List* of 1862, *q. v.*

1877. [ANON.] Vennor's Birds of Prey. < *Forest and Stream*, viii, June 14, 1877, p. 300.

Review of Vennor's *Our Birds of Prey; or, The Eagles, Hawks and Owls of Canada.* Reprinted from Toronto *Mail.*

1877. [ANON. G. B. GRINNELL. Review of E. W. Nelson's "Birds of North-eastern Illinois".] < *Forest and Stream*, viii, June 21, 1877, p. 331.

1877. "ARCHER." [G. A. STOCKWELL.] The Fauna of Michigan. [Birds.] < *Forest and Stream*, viii, 1877, pp. 224, 241, 261, 281, 300, 360, 380.

Merely a nominal, incomplete list, containing no news.

1877. BACON, G. R. Notes on some Oregon Birds. < *Am. Nat.*, xi, No. 1, 1877, p. 44.

Field-notes on 6 spp.

1877. BAGG, E. A Cuckoo's [Coccygus erythrophthalmus] Egg in a Cedar-Bird's [Ampelis cedrorum] Nest. < *Bull. Nutt. Ornith. Club*, ii, No. 4, Oct., 1877, p. 110.

With an editorial note by J. A. Allen, on other instances of parasitism of the American Cuckoos.

1877. BENDIRE, C. Notes on some of the Birds found in Southeastern Oregon, particularly in the Vicinity of Camp Harney, from November, 1874, to January, 1877. < *Proc. Boston Soc. Nat. Hist.*, xix, 1877, pp. 109–149.

An interesting list of 191 spp., fully annotated; includes some rarities, and many novel observations, especially with reference to breeding.

1877. BENTON, J. John Burroughs. < *Scribner's Monthly*, xiii, 1877, pp. 336–341, with portrait.

Includes extracts from Burroughs's ornithological writings.

1877. B[OISEAU], R. F. Our Washington letter. < *Forest and Stream*, ix, Nov. 22, 1877, p. 314.

Game-birds about Chesapeake Bay; wildfowl shooting; habits of "jacksnipe".

1877. BRACKETT, A. G. The Birds of Wyoming. < *Forest and Stream*, vii, 1877, pp. 388, 404.

Partial list, made in the vicinity of Fort Sanders; editorial remarks appended. See vol. vii, p. 4.

1877. B[REWER], T. M. Vennor's Rapacious Birds of Canada. < *Bull. Nutt. Ornith. Club*, ii, No. 1, Jan., 1877, pp. 24, 25.
Review of the work.

1877. BREWER, T. M. [Another] Defense of his Catalogue of the Birds of New England. < *Bull. Nutt. Ornith. Club*, ii, No. 2, April, 1877, pp. 44–48.
Continuation of the controversy, now degenerated to a personal issue. *Cf. op cit.*, i, p. 72 and p. 89; ii, p. 11 and p. 44.

1877. BREWER, T. M. How to Rightly Estimate the Economical Value of Birds. < *Oölogist*, iii, No. 1, 1877, pp. 6, 7.

1877. B[REWSTER], W. Nelson's "Birds of Northeastern Illinois." < *Bull. Nutt. Ornith. Club*, ii, No. 3, July, 1877, pp. 68, 69.
Review of paper in *Bull. Essex Inst.*, viii, 1876, p. 90.

1877. B[REWSTER], W. Merriam's "Review of the Birds of Connecticut." < *Bull. Nutt. Ornith. Club*, ii, No. 4, Oct., 1877, pp. 107, 108.
Review of Merriam's important paper in *Trans. Conn. Acad.*, iv, 1877, pp. 1–165.

1877. BROWN, N. C. Notes on [five species of] Birds new to the Fauna of Maine, etc. < *Bull. Nutt. Ornith. Club*, ii, No. 1, Jan., 1877, pp. 27, 28.

1877. BROWNE, F. C. A list of Birds observed on and around Clark's Island, Plymouth, Mass. < *Forest and Stream*, viii, March 22, 1877, p. 96.

1877. BURROUGHS, J. April. < *Scribner's Monthly*, xiii, 1877, pp. 799–803.
Includes some birds found along the Hudson River in that month.

1877. "C." Some Newfoundland birds. < *Forest and Stream*, viii, April 12, 1877, p. 145.

1877. COOPER, J. G. On seventy-five doubtful West-coast Birds. < *Bull. Nutt. Ornith. Club*, ii, No. 4, Oct., 1877, pp. 88–97.
This is an important commentary and criticism on this large number of birds ascribed by various writers to the region in question, but which have not been satisfactorily determined to occur there.

1877. COUES, E. Birds of the North-West: | A Hand-book | of | American Ornithology, | containing accounts of all the birds inhabiting the | Great Missouri Valley, | and many others, together representing a large majority of the | Birds of North America, | with copious biographical details from personal | observation, and an extensive synonymy. | — | By Elliott Coues, | Captain and Assistant Surgeon U. S. Army:—Secretary U. S. | Geological Survey:—Member of the National Acadamy [*sic*] of Sciences, etc:—Author of "Key to North | American Birds," "Field Ornithology," etc. | — | [Monogram.] | Boston: | Estes & Lauriat, | Salem Naturalists' Agency, | 1877. 1 vol. 8vo. pp. xi, 791.
This is simply 214 copies of the original *Birds of the North-West*, 1874, *q. v.*, reissued, rebound with publishers' new title-leaf as above.

1877. C[OUES], E. Minot's "Birds of New England." < *Bull. Nutt. Ornith. Club*, ii, No. 2, April, 1877, pp. 49, 50.
Review of the work.

1877. [COUES, E.] The Land Birds and Game Birds of New England. < *Forest and Stream*, vii, Jan. 25, 1877, p. 391.
Review of H. D. Minot's book of that name.

1877. COUES, E. Land Birds and Game Birds of New England. < *Rod and Gun*, ix, Jan. 27, 1877, p. 263.

Review of work with above title.

1877. COUES, E., and PRENTISS, D. W. Remarks on Birds of the District of Columbia. < *Field and Forest*, ii, No. 11, May, 1877, pp. 191–193.

Somewhat in the nature of a critique on P. L. Jouy's Catalogue, *op cit.*, Mar. and Apr., 1877, *q. v.* Some of the questionable points are discussed. The article was afterward appended to Jouy's in the separate reprint of the latter.

1877. FEILDEN, H. W. On the Birds of the North Polar Basin. < *P. Z. S.*, 1877, pp. 28–32.

1877. FEILDEN, H. W. List of Birds observed in Smith Sound, and in the Polar Basin during the Arctic Expedition of 1875–76. < *Ibis*, 4th series, i, Oct., 1877, pp. 401–412.

24 spp., well annotated. *Cf. Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, p. 86.

1877. GOODHUE, C. F. The Birds of Webster and adjoining towns [of New Hampshire]. < *Forest and Stream*, viii, 1877, pp. 33, 49, 98, 113, 146.

An annotated list, by an accurate observer. The titles of parts succeeding the first instalment vary slightly in wording from the first caption.

1877. HALLOCK, C. The | Sportsman's Gazetteer | and | General Guide. | The game animals, birds and fishes of North America: | their habits and various methods of capture. | Copious instructions | in shooting, fishing, taxidermy, woodcraft, etc. | Together with | a directory to the principal game resorts of the | country; illustrated with maps. | By Charles Hallock, | [etc.] | New York: | "Forest and Stream" Publishing Company, | American News Company, Agents. | 1877. 1 vol. thick 12mo. pp. 1–688, 1–208, frontisp. (portrait of author), cuts, maps.

Pages 103–237, a concise systematic treatise on the game birds of North America, some of which are treated at considerable length. The nomenclature and technicalities are from authentic sources.

1877. HATCH, P. L. Report on Ornithology [of Minnesota]. < *Bull. Minnesota Acad. Nat. Sci.*, 1877, pp. 305–309.

Additions to the list of Minnesota birds given in his previous paper in the same publication, 1874, *q. v.*

1877. HUTCHINS, J. P. Something about Birds of Central New York. < *Forest and Stream*, viii, April 19, 1877, p. 160.

Biographical notes and short list of arrivals.

1877. INGERSOLL, E. Our Winter Birds [in the vicinity of New York City]. < *Appleton's Journ.*, new ser., ii, Feb., 1877, p. 97; 11 illust.

Biographical notes on a few birds of the United States; remarks on protective mimicry in birds.

1877. I[NGERSOLL], E. Burroughs's "Wake-Robin." < *Bull. Nutt. Ornith. Club*, ii, No. 2, April, 1877, pp. 48, 49.

Review of that delightful book.

1877. [INGERSOLL E.] [Review of Vol. II of] Gentry's Life Histories of the Birds of Eastern Pennsylvania. < *The Country*, i, Dec. 22, 1877, p. 103.

1877. JONES, W. L. Arrivals of Birds. < *Field and Forest*, iii, No. 1, July, 1877, pp. 17, 18.

At Lebanon, Illinois, spring of 1877.

1877. JOUY, P. L. Catalogue of the Birds of the District of Columbia. < *Field and Forest*, ii, No. 9, Mar., 1877, pp. 154–156; No. 10, Apr., 1877, pp. 178–181.

Nominal list of 240 spp., those additional to Coues and Prentiss's *List* of 1862 in italics; stragglers marked with asterisk.

1877. JOUY, P. L. Field Notes on some of the Birds of the District of Columbia. < *Field and Forest*, iii, No. 3, Sept., 1877, pp. 51, 52.

Dendrœca cœrulea, Siurus motacilla, Chondestes grammica!, Pipilo erythrophthalmus, Strix flammea, Florida cœrulea.

1877. JOUY, P. L., COUES, E., and PRENTISS, D. W. Catalogue | of the | Birds of the District of Columbia, | Prepared by Pierre Louis Jouy, | with | Remarks on the Birds of the District, | by Drs. Coues and Prentiss. | 1877. 8vo pamphl. pp. 11.

Reissued, repaged, in an edition of 200 copies, from *Field and Forest*, Mar.–May, 1877. It consists of Jouy's *Catalogue*, *q. v.*, with the *Remarks* of Coues and Prentiss appended.

1877. KUMLEIN, L. Ornithological Notes from Texas. < *Field and Forest*, ii, No. 8, Feb., 1877, pp. 127–132.

Good running commentary on numerous spp. from the Brazos River Valley, Waller Co., Texas.

1877. KUMLEIN, L. [Notes on Texan Birds.] < *Field and Forest*, ii, No. 12, June, 1877, pp. 219, 220.

Reply to Ragsdale, *op. cit.*, p. 183.

1877. LAMBERTON, A. B. The Birds. < *Rod and Gun*, ix, March 17, 1877, p. 375.

Record of arrivals of birds at Rochester, N. Y.

1877. LANGDON, F. W. A Catalogue | of the | Birds of the Vicinity of Cincinnati [Ohio], | with Notes. | — | By Frank W. Langdon. | — | Salem, Mass.: | The Naturalist's Agency. | 1877. 8vo pamph. pp. 18.

279 spp., with notes; breeders indicated by asterisk; species included on strength of their known range have their numbers in parentheses.—A good list.

1877. LITTLETON, J. T. Southern [Ornithological] Notes. < *Forest and Stream*, viii, May 17, 1877, p. 224.

1877. MCCAULEY, C. A. H. Notes on the Ornithology of the Region about the Source of the Red River of Texas, from Observations made during the Exploration conducted by Lieut. E. H. Ruffner, Corps of Engineers, U. S. A.—By C. A. H. McCauley, Lieutenant Third United States Artillery.—Annotated by Dr. Elliott Coues, U. S. A. < *Bull. U. S. Geol. Surv.*, iii, 1877, pp. 655–695.

Very full and interesting field-notes on the habits of the birds of a particular tract of which we knew very little. The general drift of the list reminds us of Woodhouse's in Sitgreaves's *Report*, though the latter contains various species from farther southwest than Lieutenant McCauley went. This region is interesting from the number of characteristic Eastern species represented along with thoroughly Western ones, resulting in a novel *facies*. The nomenclature and technic of the article are by Dr. Coues.

1877. MCCHESNEY, C. E. Birds of the Coteau des Prairies of Eastern Dakota. < *Forest and Stream*, viii, No. 12, April 26, 1877, pp. 176, 177; No. 13, May 3, 1877, p. 192; No. 15, May 17, 1877, pp. 224, 225; No. 16, May 24, 1877, pp. 241, 242; No. 17, May 31, 1877, p. 261.

Annotated list of species.

1877. MARSH, O. C. Introduction and Succession | of | Vertebrate Life in America. | An Address | delivered before the | American Association for the Advancement of Science, | at Nashville, Tenn., August 30, 1877, | by Professor O. C. Marsh, | Vice President. 8vo. pp. 57, large-paper copies, separate from *Proc. Am. Assoc. Adv. Sci.*, n. p., n. d. [1877.]

Birds especially at pp. 18–22.—A masterly review of the whole subject, with especial reference, however, to mammals.

1877. MARSH, O. C. Recent Palæontological Discoveries in the West. < *Am. Nat.*, xi, No. 8, 1877, p. 500, fig. 84.

Notice and figure of restored *Hesperornis regalis*.

1877. "M. E. B." Blue-birds [Sialia sialis] besieged by Martins [Progne subis]. <*Field and Forest*, ii, No, 12, June, 1877, pp. 215, 216.

1877. MERRIAM, C. H. A Review of the Birds of Connecticut, with Remarks on their Habits. < *Trans. Conn. Acad.*, iv, July–Oct., 1877, pp. 1–165. Also separate, pamphlet and bound, A Review | of the | Birds of Connecticut. | By | C. Hart Merriam. | — | New Haven: | Tuttle, Morehouse & Taylor, Printers, | 1877. Large 8vo. 1 p. l., pp. 1–166.

An important article, very critical, complete and workmanlike, bringing the subject up to date, from the imperfect condition in which it was left 34 years before by LINSLEY, *Am. Journ. Sci.*, xliv, No. 2, 1843, pp. 249–274, which paper is carefully analyzed. I hold it for a model of this sort of work. 291 spp., fully annotated, with copious references. Summer residents known to breed, 135; permanent residents, 41; migrants not known to breed, 90; winter residents, regular, 36; irregular, 31; summer visitants, irregular, 30; rare and accidental visitors, 46; rare and irregular migrants, 9.

1877. MINOT, H. D. The | Land-Birds and Game-Birds | of | New England | with | Descriptions of the Birds, their Nests and Eggs, | their Habits and Notes. | With Illustrations. | — | By | H. D. Minot. | — | [Quotation.] | Salem, Mass. | Naturalists' Agency. | Boston: | Estes & Lauriat. | 1877. 1 vol. 8vo. pp. xvi, 456, with 29 woodcc. on 1 pl. (frontisp.) and 22 in text.

Published in December, 1876. *Cf. Bull. Nutt. Ornith. Club*, ii, 1877, p. 49; *Forest and Stream*, vii, Jan. 25, 1877, p. 391; *Rod and Gun*, ix, Jan. 27, 1877, p. 263.

1877. MINOT, H. D. Minot's New England Birds; Additions. < *Am. Nat.*, xi, No. 3, 1877, p. 175.

Note of his "careless" (as he calls it) omission of *Nauclerus forficatus*, *Buteo swainsoni*, *Tyrannus verticalis*, and *Helminthophaga pinus* from his work.

1877. MINOT, H. D. Birds' Nests. < *Harper's New Monthly Mag.*, lv, 1877, pp. 90–97, 256–259, 9 illustrations.

Description of various forms of nest-architecture; illustrated very finely by woodcuts from photographs.

1877. NELSON, E. W. Birds of Northeastern Illinois. < *Bull. Essex Inst.*, viii, April, 1877, pp. 90–155.

A thoroughly good list, annotated, of 316 spp. and several vars. *Cf. Am. Nat.*, xi, 1877, p. 615.

1877. NELSON, E. W. Notes upon Birds observed in Southern Illinois between July 17 and September 4, 1875. < *Bull. Essex Inst.*, ix, June, 1877, pp. 32–65.

Notices of about a hundred species.

1877. PURDIE, H. A. Distribution of New England Birds.—A reply to Dr. T. M. Brewer. < *Bull. Nutt. Ornith. Club*, ii, No. 1, Jan., 1877, pp. 11–17.

Continuation of the controversy from *op. cit.*, i, pp. 72 and 89. *Quiscalus major*, *Corvus ossifragus*, *Ægialitis wilsonia*, *Nettion crecca*, *Sula fiber*, and others, claimed for New England, on apparently good grounds.

1877. PURDIE, H. A. Notice of a few Birds of rare or accidental Occurrence in New England. < *Bull. Nutt. Ornith. Club*, ii, No. 1, Jan., 1877, pp. 20–22.

14 spp., annotated.

1877. RAGSDALE, G. H. [Notes on Texan Birds.] < *Field and Forest*, ii, No. 10, April, 1877, p. 183.

Reflecting on Kumlein, *op. cit.*, pp. 127–132.

1877. RATHBUN, F. R. A Partial Catalogue of the Birds of Central New York, from observations taken in the Counties of Cayuga, Seneca, and Wayne by Mr. H. G. Fowler, of Auburn, N. Y., and from the Cabinet of Skins of New York Birds collected by Mr. J. B. Gilbert, of Penn Yan, Yates County. Divided and arranged in accordance with the "Check List of North American Birds" by Elliott Coues, M. D., U. S. A., and dedicated to the Cayuga Historical Society. < *Auburn* [N. Y.] *Daily Advertiser* [newspaper] of August 14, 1877.

Annotated list of 191 spp.—*Anthus ludovicianus* given as breeding. "The compiler of this list makes due grace to 'Forest and Stream', in the columns of which publication it first appeared by instalments, void the classification and occasional notes."—Additional note on same, by same, *ibid.*, Sept. 6, 1877.—See 1876, FOWLER, H. G.

1877. REYNOLDS, H. S. (*Miss* or *Mrs.*) Winter Birds of Arkansas. < *Am. Nat.*, xi, No. 5, 1877, pp. 307, 308.

Desultory observations on a few species.

1877. RHODES, W. Imported Birds for our woods and parks. < *Forest and Stream*, viii, April 19, 1877, p. 165.

Narrative of experiments in acclimatization of European birds in Canada.

1877. RIDGWAY, R. United States Geological Exploration of the Fortieth Parallel. Clarence King, Geologist-in-charge.—Part III. Ornithology. By Robert Ridgway. Washington: Government Printing Office. 1877. 4to. 1 cover-l., pp. 303–669.

The above is the half-title of the ornithological portion of the *Report of the Exploration of the Fortieth Parallel*, being Part III of Vol. IV of the series of reports, separately issued in paper cover, but with the original pagination; the cover-title only differs in beginning "Extract from Vol. IV. Report of", etc. This separate issue is not dated; the date is 1877, probably December. I got my copy Feb. 25, 1878. See important bibliogr. note on p. 392 of the report. This work, as originally prepared, was stereotyped in 1871–72 (not 1870, as the note just mentioned states), but never published, citations of the work prior to 1878 having all been made from proof-impressions. This original draft of the work was suppressed, and the stereo. plates were melted in 1876. There is a single much mutilated set of proofs in my possession (Feb. 28, 1878). Meanwhile, the report was entirely rewritten, and the various citations of the original suppressed report which are extant do not apply to the actual report as published, many changes of nomenclature, and others, having been made. See *Bull. Nuttall Club*, iii, April, 1878, pp. 81–83.

This important memoir contains a description of the route traversed, physical features of the Great Basin, various local avifaunæ of the same, special descrip-

1877. RIDGWAY, R.—Continued.

tions of the localities where collections and observations were made, general remarks on the avifaunæ of the Great Basin, and a catalogue of the 262 species collected or observed—all this interesting matter being preliminary to the report proper. In the latter, the birds are treated at full length, with brief synonymy and extended critical and field notes; the whole forming one of the most valuable contributions we possess to the bird-history of Utah, Nevada, and adjacent portions of California. The articles are specially notable for the many measurements of fresh specimens, and notes of the life-colors of the bill, feet, and eyes. The specimens collected are all individually catalogued with these notes, in addition to the general text. There are no new species in this report; but the nomenclature differs in many instances from that previously used by Mr. Ridgway in the *History of North American Birds* and elsewhere, during 1873–77.

1877. RIDGWAY, R. The Birds of Guadalupe Island, discussed with reference to the present Genesis of Species. < *Bull. Nutt. Ornith. Club*, ii, No. 3, July, 1877, pp. 58–66.

The material here discussed is the same as that upon which was based a prior descriptive paper, *Bull. U. S. Geol. Surv. Terr.*, ii, 1876, pp. 183–195, *q. v.*

1877. RIDGWAY, R. Mrs. Maxwell's Colorado museum. Catalogue of the Birds. < *Field and Forest*, ii, No. 11, May, 1877, pp. 195–198: No. 12, June, 1877, pp. 208–214.

List of 234 spp. represented in this fine collection, with little annotation.—*Scops asio*, ε, *maxwelliæ*, p. 213, n. v.

1877. RIDGWAY, R. Mrs. Maxwell's Colorado Museum. Additional Notes. < *Field and Forest*, iii, No. 1, July, 1877, p. 11.

On *Junco caniceps* and *J. annectens*.

1877. ROOSEVELDT, T., *and* MINOT, H. D. The Summer Birds of the Adirondacks in Franklin County, N. Y. By Theodore Rooseveldt, Jr., and H. D. Minot. 1877. 8vo. pp. 4.

97 spp., shortly annotated.

1877. ST. CLAIR, J. W. Some Southern wood notes [Georgia]. < *Forest and Stream*, viii, May 24, 1877, p. 240.

1877. SCOTT, DAVID. The Tendency in Birds to Vary their Habits. < *Field and Forest*, vol. ii, No. 7, Jan., 1877, pp. 107–114.

Nearly all the illustrations of the well-known fact are drawn from North American birds. Two generalizations are suggested: I. "The influencing agent which prompts the bird to build its domicile is instinct." II. "Nearly all birds modify their habitations to accord with exteral [*sic*] influences." That is to say internal influences prompt them to build, and external influences make them build in different ways.

1877. [SCOTT, W. E. D.] [On Albinism, and other Notes from New Jersey.] < *The Country*, i, Nov. 17, 1877, p. 43.

1877. [SCOTT, W. E. D.] [Rare Occurrences in Southern New Jersey.] < *The Country*, i, Dec. 8, 1877, p. 79.

1877. [SCOTT, W. E. D.] [Ornithological] Notes from Central New York. < *The Country*, i, Dec. 29, 1877, p. 115. See p. 165.

1877. STEVENS, W. B. Ornithological Notes [of Arrivals of Birds at West Farms, N. Y.] < *Forest and Stream*, viii, July 19, 1877, p. 400.

1877. STREETS, T. H. Contributions to the Natural History of the Hawaiian and Fanning Islands and Lower California, made in connection with the United States North Pacific Surveying Expedition,

1877. STREETS, T. H.—Continued.

1873–75. By Thos. H. Streets, M. D., Passed Assistant Surgeon, U. S. Navy.—Washington: Government Printing Office. 1877. 8vo. pp. 172. = *Bulletin of the United States National Museum*, No. 7.

Ornithology, pp. 9–33. Identifications of the species ascribed to Dr. Coues by the author. The matter is synonymatic, descriptive, and miscellaneous, including critical and field notes. The most interesting species noted are *Coriphilus kuhli*, *Gallinula sandvicensis*, *Chaulelasmus couesi*, and *Puffinus nativitatis*, sp. n., p. 29.

1877. TENNEY, S. The Raven [Corvus carnivorus] and the Sooty Tern [Sterna fuliginosa] in Williamstown, Mass. < *Am. Nat.*, xi, No. 4, 1877, p. 243.

1877. THOMPSON, M. Hunting with the long bow. < *Harper's New Monthly Mag.*, pp. 238–255, 13 illustrations.

Biographies of waterfowl and other game birds, with exquisite drawings of each.

1877. VENNOR, H. G. Our Birds of Prey; or, the Eagles, Hawks, and Owls of Canada. By Henry G. Vennor. Montreal, Dawson Brothers, 1877. Roy. 8vo or sm. 4to. pp. 154, with 30 photog. pll.

Title defective; from my review of the book, *The Nation*, xxiv, No. 623, June 7, 1877, p. 341

1877. WARD, L. F. A Congress of Birds. < *Field and Forest*, ii, No. 7, Jan., 1877, pp. 122, 123.

Gathering of numerous spp. in one spot along Rock Creek, near Washington, D. C.

1877. WHEATON, J. M. The Ruff [Philomachus pugnax] and the Purple Gallinule [Porphyrio martinica] in Ohio. < *Bull. Nutt. Ornith. Club*, ii, No. 3, July, 1877, p. 83.

1877. WILSON, T. J. Ornithological. < *Daily Advertiser* (newspaper of Auburn, N. Y.) of Sept. 6, 1877.

A few annotations of F. R. Rathbun's list, which appeared in same paper for Aug. 14, 1877.

1877. "WOLVERENE." Protect the Birds. < *Rod and Gun*, ix, Jan. 6, 1877, p. 216.

1878. ABBOTT, C. C. Birds' Architecture. < *The Country*, i, Mar. 9, 1878, p. 276.

Discussing Wallace's *Theory of Birds' Nests*, and Allen's criticism thereon.

1878. ALLEN, J. A. A List of the Birds of Massachusetts, with Annotations. < *Bull. Essex Inst.*, x, 1878, pp. 3–37.

This may be considered to supersede the various previous tracts on the same subject, both by the same and other authors, as it completely sums our knowledge of the subject. The paper opens with summary considerations, followed by a valuable historical *résumé*. 1. Species of authentic occurrence within the State, 317. 2. Extirpated, 4. 3. Of probable occurrence, 24. 4. Hypothetical and doubtful species, 3 (*Myiodioctes minutus*, *Empidonax pygmæus* of Minot, *Thaumatias linnæi*). 5. Introduced undomesticated species, 6. "Considered as fairly entitled to recognition as Massachusetts birds", 340. Known to breed in the State, about 135. Extremely rare or accidental visitors, 90. North American species added since 1867, 35.

1878. ALLEN, J. A. An inadequate "Theory of Birds' Nests." < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, pp. 23–32.

A critique upon Wallace's well-known essay entitled "Theory of Birds' Nests" (*Intellectual Observer*, July, 1867, and numerous subsequent reprints); its applicability tested by reference to the breeding habits of North American birds.

1878. A[LLEN], J. A. Birds of the Vicinity of Cincinnati. < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, p. 34.
Review of F. W. Langdon's *List*, 8vo, Salem, 1877, pp. 18.

1878. A[LLEN], J. A. Birds of Central New York. < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, pp. 34, 35.
Review of F. B. Rathbun's *List*, in *Auburn Daily Advertiser*, Aug. 14, 1877.

1878. A[LLEN], J. A. Summer Birds of the Adirondacks. < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, p. 36.
Notice of Rooseveldt and Minot's paper, 8vo, 1877, pp. 4.

1878. A[LLEN], J. A. Birds of Southern Illinois. < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, p. 36.
Review of E. W. Nelson's paper, *Bull. Essex Inst.*, ix, p. 32.

1878. A[LLEN], J. A. Gentry's "Life-Histories of the Birds of Eastern Pennsylvania." < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, pp. 36, 37.
Review of the 2d vol. of this work.

1878. A[LLEN], J. A. Streets's Notes on the Birds of Lower California and the Hawaiian and Fanning Islands. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, pp. 80, 81.
Review of the paper in *Bull. Nat. Mus.*, No. 7, 1877, pp. 9–33.

1878. A[LLEN], J. A. Bendire's Notes on the Birds of Southeastern Oregon. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, p. 81.
Review of the paper in *Pr. Bost. Soc. N. H.*, xix, 1877, pp. 109–149.

1878. A[LLEN], J. A. Ridgway's Report on the Ornithology of the Fortieth Parallel. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, pp. 81–83.
Review of this publication, 4to, Washington, pp. 303–670, 1877. With note by E. C[ones].

1878. A[LLEN], J. A. Feilden's "List of Birds observed in Smith Sound," etc. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, p. 86.
Review of his paper in the *Ibis*, i, 4th ser., 1877, pp. 401–412.

1878. A[LLEN], J. A. Maynard's Birds of Florida. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, p. 145.
Notice of appearance of Part IV of the work—4to, C. J. Maynard & Co., Newtonville, Mass., pp. 89-112, one pl. The title appears to have been modified to "The Birds of Florida, with the Water and Game Birds of Eastern North America". See 1872–78, MAYNARD, C. J.

1878. A[LLEN], J. A. Jordan's Manual of Vertebrated Animals. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, pp. 145, 146.
Short notice of the 2d ed. of this work.

1878. ALLEN, J. A. Occurrence of three Species of Sea-Ducks at St. Louis, Missouri. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, pp. 148, 149.
Œdemia americana, *Œ. fusca*, *Œ. perspicillata*.

1878. ALLEN, J. A. The Carolinian Fauna. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, pp. 149, 150.
Continuing the subject from BICKNELL, *op. tom. cit.*, pp. 128–132.

1878. A[LLEN], J. A. Brewer's Supplement to his Catalogue of New England Birds. < *Bull. Nutt. Ornith. Club*, iii, No. 4, Oct., 1878, p. 185.
It appears from this notice, that the ultra-conservatism with which Dr. Brewer's Catalogue of 1875 was drawn up resulted in the necessity for this supplement, there being twenty-one species to add.

1878. ALLEN, J. A. Description of a Fossil Passerine Bird from the Insect-bearing Shales of Colorado. < *Bull. U. S. Geol. and Geog. Surv. Terr.*, iv, No. 2, May 3, 1878, art. xix, pp. 443–445, pl. 1, figg. 1, 2.

Palæospiza bella, g. sp. n., p. 443—the first fossil Passerine discovered in N. A. It bears distinct impressions of feathers. N. B.—A few copies of this No. of the *Bull.* were in private circulation from about April 14, and some electros. of the plate were sent out during this month. Thus, the cut appeared in a Californian newspaper, with a compiled account of the bird, April 27. The article was immediately reprinted in the *Am. Journ. Sci.* for May, 1878.

1878. [ANON.] A Remarkable Fossil Bird [Palæospiza bella, Allen]. < *Pacific Rural Press* (newspaper), vol. xv, No. 17, April 27, 1878, p. 257, fig.

Anonymous, but contributed to the paper by the U. S. Geological Survey. It is an abstract of the original account, accompanied by an electro., and actually antedates the regular publication of the article by six days.

1878. [ANON.] Ridgway's Ornithology of the Fortieth Parallel. < *Amer. Nat.*, xii, No. 7, July, 1878, p. 469.

Short notice of the work.

1878. [ANON.] American Ornithology, [etc.] < *Forest and Stream*, x, Feb. 7, 1878, p. 12.

Notice of reissue of an ed. of Wilson and Bonaparte, 3 vols. 8vo, New York, J. W. Bouton.

1878. [ANON.] [Notice of A. Pope's] Upland Game Birds and Water-fowl of the United States, [etc.] < *Forest and Stream*, x, May 9, 1878, p. 266; 2d notice, title modified, May 30, 1878, p. 325.

1878. AUGHEY, S. Department of the Interior. | United States Geological Survey. | F. V. Hayden, U. S. Geologist-in-charge. | — | First Annual Report | of the | United States | Entomological Commission | for | The Year 1877 | relating to the | Rocky Mountain Locust | and | the best methods of preventing its injuries and of guarding against its invasions, in pursuance of an appropria- | tion made by Congress for this purpose. | With maps and illustrations. | — | Washington: | Government Printing Office. 1878. 1 vol. 8vo. pp. i–xvi, 1–477, [1]–[294], 6 ll., pll. i–v, maps, cuts. > Appendix II. Notes on the Nature of the Food of the Birds of Nebraska. By Prof. Samuel Aughey. pp. [13]–[62].

A considerable paper, giving a nearly complete list of the birds of the State, fully annotated from the special perspective implied in the title of the book, and including tabular exhibits of contents of stomachs in a thousand cases or more. Other remarks are those ordinarily making part of a local list. It would seem that nearly all birds eat grasshoppers under some circumstance, if not habitually. The nomenclature of the paper is revised by E. Coues.

1878. BALLOU, W. H. The Natural History of the Islands of Lake Erie. < *Field and Forest*, iii, No. 9, Mar., 1878, pp. 135–137.

Chiefly ornithological, and includes a nominal list of birds; the breeders marked with an asterisk.

1878. BARBER, E. A. Ornithological Notes. < *Amer. Nat.*, xii, No. 7, July, 1878, pp. 477, 478.

On peculiarities in oviposition of *Molothrus pecoris* and *Sturnella magna*.

1878. BENNER, F. Bird Notes from Long Island. < *Forest and Stream*, x, 1878, pp. 174, 215.

1878. BICKNELL, E. P. On the animal and vegetable life of the past winter [at Riverdale, N. Y.]. < *The Country*, i, Mar. 30, 1878, p. 324.

1878. BICKNELL, E. P. Evidences of the Carolinian Fauna in the lower Hudson Valley. Principally from Observations taken at Riverdale, N. Y. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, pp. 128–132.
Remarks on 13 spp. the presence of which attests the main proposition.

1878. BLACHEY, C. P. Birds of Kansas. < *The Valley Naturalist*, i, No. 9, Sept., 1878, p. 42; No. 10, Oct., 1878, p. 53: to be continued.
Annotated list of species.

1878. BRACE, L. J. K. Notes of a few Birds observed at New Providence, Bahamas, not included in Dr. Bryant's List of 1859. < *Proc. Bost. Soc. Nat. Hist.*, xix, for 1877, 1878, pp. 240, 241.
7 spp., among them one called "Athene cunicularia". *Passer domesticus* "introduced within a few years".

1878. BREWER, T. M. Variations in the Nests of the same Species of Birds. < *Am. Nat.*, xii, No. 1, 1878, pp. 35–40.
The instances are North American—notably *Dendrœca dominica*, *Icterus cucullatus*, *Empidonax acadicus*.

1878. BREWER, T. M. Changes in our North American Fauna. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, pp. 49–52.
Addition of *Totanus ochropus*, *Ægialitis hiaticula*, and *Larus canus*, and subtraction of *Podiceps cristatus*. The several cases are fully discussed.

1878. BREWER, T. M. [Note on Florida cærulea and Dendrocygna fulva.] < *Proc. Bost. Soc. Nat. Hist.*, xix, 1878, p. 259.

1878. BREWER, T. M. Notes on certain Species of New England Birds, with Additions to his Catalogue of the Birds of New England. < *Proc. Bost. Soc. Nat. Hist.*, xix, April, 1878, pp. 301–309.
Twenty-one additions to his list of 1875.

1878. B[REWER], T. M. Allen's Birds of Massachusetts. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, pp. 138–140.
Review of J. A. Allen's paper, *Bull. Essex Inst.*, x, 1878, pp. 3–37, *q. v.*

1878. BREWER, T. M. Apologetic. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, pp. 147–148.
To N. C. Brown, *in re Ammodromus caudacutus et Micropalama himantopus.*

1878. BREWER, T. M. Interesting Captures [of Ibis falcinellus and Phalaropus hyperboreus in Massachusetts]. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, p. 151.
Note by W. Brewster of common occurrence of the Phalarope in Massachusetts.

1878. BREWER, T. M. Two more Birds new to the Fauna of North America. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, p. 152.
Vireo flavoviridis, *Sturnella mexicana*, taken by Dr. J. C. Merrill at Fort Brown, Texas.

1878. BREWER, T. M. Bird Architecture, I [II, III]. < *Scribner's Monthly Magazine*, xvii, 1878, pp. 47–53, 257–269, 305–315; 33 illust.
Popular accounts of birds' nests, partly derived from North American birds

1878. BREWSTER, W. Descriptions of the First Plumage in Various Species of North American Birds. < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, pp. 15–23; No. 2, April, 1878, pp. 56–64; No. 3, July, 1878, pp. 115–123; No. 4, Oct., 1878, pp. 175–182.

An important contribution, describing the first plumages, some of which were before unknown, of various species.—I. This portion of the article handles *Turdidæ, Sylviidæ, Paridæ, Sittidæ, Troglodytidæ, Sylvicolidæ.* II. *Sylvicolidæ* continued, *Tanagridæ, Hirundinidæ, Ampelidæ.* III. *Vireonidæ, Laniidæ, Fringillidæ.* IV. *Icteridæ, Tyrannidæ, Caprimulgidæ, Cuculidæ, Picidæ;* in all, 98 spp.

1878. B[REWSTER], W. Ornithology of the Wheeler Expeditions of 1876 and 1877. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, pp. 136–138.

Review of Henshaw's papers in the publication referred to in the title.

1878. BROWN, N. C. A List of Birds observed at Coosada, Central Alabama. < *Bull. Nutt. Ornith. Club*, iii, No. 4, Oct., 1878, pp. 168–174: to be continued.

This part of the paper treats of 40 spp., annotated.

1878. BROWNE, F. C. Spring Migration of Birds. < *Forest and Stream*, x, Mar. 7, 1878, p. 76.

Tabular exhibit of dates of arrival of 20 common spp. in Eastern Massachusetts from 1853 to 1877.

1878? BURROUGHS, J. Wake-Robin

I hear of an edition of about this date, perhaps 1877, which, however, I have never seen. See the orig. ed., 1871. See 1877, I[NGERSOLL], E.

1878. "BUSHWHACKER." Brant and quail [various species] in Texas. < *Forest and Stream*, ix, Jan. 31, 1878, p. 489.

1878. CARNIFEX, JOHN (*pseudonyme*). Some Western Sparrows [and other birds]. < *The Country*, July 20, 1878.

Various *Fringillidæ*, as *Plectrophanes* spp., *Passerculus bairdi, Calamospiza bicolor;* also, *Anthus spraguii.*—Notes on their habits, largely derived from Coues.

1878. C[LARKE], S. C. Notes on the Birds of Halifax Inlet, East Florida. < *Forest and Stream*, x, 1878, pp. 255.

1878. COE, W. W. Spring Notes [at Portland, Ct.]. < *Forest and Stream*, x, April 4, 1878, p. 156.

1878. COOPER, W. A. Notes on the breeding habits of Hutton's Vireo (Vireo huttoni) and the Gray Titmouse (Lophophanes inornatus), with a description of their Nests and Eggs. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, pp. 68, 69.

1878. COUES, E. Field-Notes on Birds observed in Dakota and Montana along the forty-ninth parallel during the seasons of 1873 and 1874. < *Bull. U. S. Geol. and Geogr. Surv. Terr.*, iv, No. 3, July, 29, 1878, pp. 545–661.

The author was attached to the U. S. Northern Boundary Commission, which in 1873 and 1874 surveyed the Boundary Line on the 49th parallel from the Red River of the North to the Rocky Mountains, a distance of 850 miles along the northern borders of the Territories of Dakota and Montana; and this paper presents at considerable length the results of his actual observations in the field. There are tabular lists of the specimens collected, with dates, localities, measurements, &c.; pretty full biographies of some of the species, and shorter notes on the rest; preceded by a comparison of the faunal characteristics of different portions of the country examined, and concluded with a slight special bibliography. A much more elaborate presentation of the subject was contemplated, but this paper is doubtless the only outcome of the affair we shall have. Also published separately, 200 copies, "author's edition", being merely oversheets, same title and pagination.

1878. COUES, E. New Birds for the United States Fauna. < *The Country* (newspaper, New York—since dead), July 13, 1878, p. 184.

Buteo albocaudatus, Scops enano, Crotophaga sulcirostris, Pitangus derbyanus, Ornithion incanescens [error for *O. imberbe*], collected in Texas by George B. Sennett.

1878. COUES, E., *and* YARROW, H. C. Notes on the Natural History of Fort Macon, N. C., and Vicinity. (No. 4.) < *Proc. Acad. Nat. Sci. Phila.*, 1878, pp. 21–28.

II. Birds, pp. 22–24. This article is supplementary to that in *Pr. Phila. Acad.*, 1871, pp. 12–49, *q. v.*, adding 11 spp. to the former list.

1878. "D. L. B." Spring Arrivals [in Western Long Island]. < *Forest and Stream*, x, April 25, 1878, p. 216.

1878. EAGLE, C. H. The Capture of several Rare Birds near West Point, New York. < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, pp. 45–47.

Corvus ossifragus, Helminthophaga celata, Dendrœca cærulea, Vireo philadelphicus, Stelgidopteryx serripennis, Ampelis garrulus.

1878. EATON, D. H. List of Birds in Peotone [Illinois] and vicinity. < *Forest and Stream*, xi, Aug. 22, 1878, p. 47.

65 spp., with brief notes; should be accepted with caution.

1878. GREEN, F. C. Birds of Milwaukee County, Wis[consin]. < *The Valley Naturalist* (newspaper of St. Louis, Mo.), vol. i, No. 6, June, 1878, p. 23; No. 7, July 1878, p. 27: to be continued.

Annotated list of species.

1878. [GRINNELL, G. B.] [Review of] The Birds of Southeastern Oregon [by Capt. Chas. Bendire, U. S. A.] < *Forest and Stream*, ix, Jan. 31, 1878, p. 489.

1878. [GRINNELL, G. B.] [Notice of charts by J. M. Le Moine, entitled] Les Oiseaux du Canada. < *Forest and Stream*, x, Feb. 7, 1878, p. 3.

1878. [GRINNELL, G. B.] Birds with teeth. < *Forest and Stream*, x, Feb. 21, 1878, p. 35, 3 fig.

Account of fossil *Odontornithes* discovered by Prof. O. C. Marsh in Cretaceous deposits of the West.

1878. [GRINNELL, G. B.] The Birds of Connecticut. < *Forest and Stream*, x, May 16, 1878, p. 275.

Review of C. H. Merriam's "Review of the Birds of Connecticut".]

1878. HAMLIN, MARY A. Our Birds of Prey. < *Familiar Science and Fanciers' Journal*, i (new series), Feb., 1878, p. 29.

1878. HOFFMAN, W. J. Remarks upon Albinism in several of our [North American] Birds. < *Am. Nat.*, xii, No. 7, July, 1878, pp. 474–476.

Corvus americanus, Turdus migratorius, Hirundo horreorum, Passer domesticus, Buteo borealis, Agelæus phœniceus, Sturnella magna, Calamospiza bicolor.

1878. HUGHES, W. H. Birds of Michigan. < *The Valley Naturalist* (monthly newspaper of St. Louis, Mo.), i, No. 3, Mar., 1878, p. 11; No. 4, Apr., 1878, pp. 14, 15; No. 8, Aug., 1878, pp. 34, 35; No. 10, Oct., 1878: to be continued.

Annotated list of species.

1878. HUYLER, A. I. Winter birds on the Hackensack [River, N. J.]. < *The Country*, i, Jan. 12, 1878, p. 149.

1878. [INGERSOLL, E.] [Review of] The Birds of Southeastern Oregon [by Capt. Chas. Bendire]. < *The Country*, i, Jan. 12, 1878, p. 149.

1878. [INGERSOLL, E.] An Aged Naturalist Gone. < *The Country*, i, Jan. 19, 1878, p. 160.
Obituary notice of Dr. Jared P. Kirtland.

1878. INGERSOLL, E. [Notice of Coues's forthcoming "Birds of the Colorado Valley". < *The Country*, i, March 9, 1878, p. 272. See p. 310.

1878. INGERSOLL, E. [Review of] "Ornithology of the Lower Rio Grande." By George B. Sennett. < *The Country*, i, March 9, 1878, p. 283.

1878. INGERSOLL, E. Linnean Society. < *The Country*, i, March 30, 1878, p. 325.
Secretary's report of proceedings, including notes on birds of Long Island, Adirondack region, and vicinity of New York City.

1878. INGERSOLL, E. Ornithological News from the United States. < *The* [*London*] *Field*, li, March 16, 1878, p. 323.
Review (¾ column) of R. Ridgway's *Ornithology of the Survey of the 40th Parallel.*

1878. "J. M. W." Professional Oologists. < *Familiar Science and Fanciers' Journ.*, new ser., v, April, 1878, p. 75.
Instances of despoilation of nests by various animals and birds.

1878. JONES, WM. L. Birds of St. Clair County, Ill[inois]. < *The Valley Naturalist* (monthly newspaper, St. Louis, Mo.), i, No. 1, Jan., 1878, p. 3; No. 2, Feb., 1878, p. 6; No. 3, Mar., 1878, p. 11; No. 6, June, 1878, p. 23; No. 7, July, 1878, pp. 26–27; No. 8, Aug., 1878, p. 35; No. 9, Sept., 1878, p. 42; No. 10, Oct., 1878, p. 53: to be continued.
Annotated list of species; the parts noted here only carry it into *Ampelidæ.*

1878. JORDAN, D. S. Manual | of the | Vertebrates | of the | Northern United States, | including | the district east of the Mississippi river, and north of | North Carolina and Tennessee, exclusive | of marine species. | By | David Starr Jordan, Ph. D., M. D. | Professor of Natural History in Butler University. | — | Second edition, revised and enlarged. | — | Chicago: Jansen, McClurg & Company. | 1878. 1 vol. squarish 12mo. pp. 407.
The bird-matter of this admirable manual is nearly the same as in the orig. ed., 1876, *q. v.*; but there are addenda at pp. 353, 354, 403.

1878. LAWRENCE, N. T. Notes on several rare Birds taken on Long Island, N. Y. < *Forest and Stream*, x, May 2, 1878, p. 235.

1878. [LENTE, W. K.] Florida Notes [concerning certain Birds]. < *Forest and Stream*, ix, Jan. 31, 1878, p. 489. See p. 327.

1878. MAYNARD, C. J. Modifications in the Breeding Habits of Birds Caused by the Persecutions of Man. < *Familiar Science and Fanciers' Journal*, v (new series), Jan., 1878, p. 7.

1878. MEARNS, E. A. The Capture of several Rare Birds near West Point, New York. < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, pp. 45, 46.
Corvus ossifragus, Helminthophaga celata, Dendrœca cærulea, Vireo philadelphicus, Stelgidopteryx serripennis, Ampelis garrulus.

1878. MEARNS, E. A. A Description of unusually developed individuals of three Species, and remarks on uncommon plumages of several others, taken near West Point, N. Y. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, pp. 69–72.

1, *Geothlypis philadelphia*; 2, *Setophaga ruticilla*; 3, *Ampelis cedrorum*; with remarks on *Helminthophaga peregrina*, *Dendrœca pennsylvanica*, *Corvus americanus*, *Picus pubescens*, *Myiodioctes mitratus*, *Siurus motacilla*.

1878. MEARNS, E. A. Capture of Two Rare Birds in the Hudson River Valley. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, p. 146.

Centurus carolinus, *Colymbus septentrionalis*.

1878. MERRIAM, C. H. Correction. < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, p. 47.

Of his *Review of Connecticut Birds*, where *Podiceps cristatus* should read *P. griseigena* var. *holbölli*.

1878. MERRIAM, C. H. Remarks on some of the Birds of Lewis County, Northern New York. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, pp. 52–56; No. 3, July, 1878, pp. 125–128.

1878. M[ERRIAM], C. H. Recent Lists of the Birds of Central New York. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, pp. 83–86.

In S. L. Willard's *Directory of the Ornithologists of the United States and elsewhere*. Some judicious remarks on "local lists" in general.

1878. MOORE, N. B. List of Birds, chiefly visitors from N. America, seen and killed in the Bahamas in July, Aug., Oct., Nov., and Dec., 1876. < *Proc. Boston Soc. Nat. Hist. for* 1877, xix, 1878, pp. 241–243.

30 spp., briefly annotated.

1878. MOORE, N. B. Observations on some Birds seen near Nassau, N. Providence, in the Bahama Islands. < *Proc. Boston Soc. Nat. Hist. for* 1877, xix, 1878, pp. 243–247.

Remarks on "*Athene* (*Spheotyto*) *cunicularia*", "*Stryx furcata?*", *Certhiola bahamensis*, and a few others.

1878. MURDOCH, J. Effects of the warm winter on the migration of Birds [in Massachusetts]. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, pp. 75, 76.

1878. [NEWCOMB, R. L.] Extracts from a naturalist's note-book [at Salem, Mass.]. < *Forest and Stream*, x, Apr. 4, 1878, p. 155.

1878. NEWCOMB, R. L. Field Notes [on Birds at Salem, Mass.]. < *The Country*, i, Apr. 13, 1878, p. 354.

1878. NEWCOMB, R. L. [Occurrence of rare Birds at Salem, Mass.] < *The Country*, ii, June 29, 1878, p. 152.

1878. "P. B." Our Salem Letter.—No. 6. < *Familiar Science and Fanciers' Journal*, i (new series), Feb., 1878, p. 23.

Contains notes upon *Mergulus alle* in winter at Salem, Mass., and the domestication of *Melospiza melodia*, with other matters.

1878. PENNOCK, C. J. Field Notes [made in the Adirondacks, May 23—June 14, 1878]. < *The Country*, ii, June 29, 1878, p. 152.

1878. POPE, A. Upland Game Birds | and Water Fowl $\frac{\text{of}}{\text{the}}$ | United States. | By A Pope Jr | Published by | Charles Scribner's Sons, New York, | Successors to Scribner, Armstrong & Co. [No date. Copyright dated 1877 for Part I, for the rest 1878.] Oblong folio, size 22×28 inches, not paged; pub. in 10 parts, stiff paper covers, 2 folios of letter-press and 2 chromolithogr. pll. to each, unsewed, at irregular intervals in (1877 and ?) 1878. Pll. not numbered.

Above is the cover-title of this publication, which forms a handsome centre-table book for the sporting public. The execution of the plates is excellent. The plates are as follows:—Part I, 1. Green-winged Teal, 2. American Snipe. Pt. II, 3. Woodcock, 4. Mallard. Pt. III, 5. American Quail, 6. Black Duck. Pt. IV, 7. Ruffed Grouse, 8. Blue-billed Duck. Pt. V, 9. Pinnated Grouse, 10. Red-headed Duck. Pt. VI, 11. Canada Grouse, 12. Wood Duck. Pt. VII, 13. Valley Quail of California, 14. Buffle-headed Duck. Pt. VIII, 15. Upland Plover, 16. Golden-eyed Duck. Pt. IX, 17. Mountain Quail of California, 18. American Widgeon. Pt. X (not out yet). The text, prepared by Ernest Ingersoll, is largely compiled from the usual sources, and is very good.

1878. P[URDIE], H. A. Sennett's Notes on the Ornithology of the Lower Rio Grande, Texas. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, pp. 144, 145.

Review of paper in *Bull. U. S. Geol. Surv.*, iv, No. 1, Feb. 5, 1878, pp. 1–66, *q. v.*

1878. PURDIE, H. A. Capture of the Yellow-throated Warbler in Massachusetts, and Notes on other Rare Massachusetts Birds. < *Bull. Nutt. Ornith. Club*, iii, No. 3, July, 1878, p. 146.

Dendrœca dominica, Rallus elegans, Anser hyberboreus.

1878. RIDGWAY, R. Three additions to the Avifauna of North America. < *Bull. Nutt. Ornith. Club*, iii, No. 1, Jan., 1878, pp. 37, 38.

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1878. RIDGWAY, R. Notes on some of the birds of Calaveras County, California, and adjoining localities. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, pp. 64–68.

Annotated list of 47 spp. (including the subspp.).

1878. RIDGWAY, R. Notes on Birds observed at Mount Carmel, Southern Illinois, in the Spring of 1878. < *Bull. Nutt. Ornith. Club*, iii, No. 4, Oct., 1878, pp. 162–166.

Annotated list of 25 spp. Nesting of *Falco communis.*

1878. [RIDGWAY, R.] Song Birds of the West. < *Harper's New Monthly Magazine*, lvi, 1878, pp. 857–880, 19 very fine illustrations.

1878. RIDGWAY, R. On the Plains, | and | Among the Peaks; | or, | how Mrs. Maxwell | made her | Natural History Collection. | — | By | Mary Dartt. | — | Philadelphia: | Claxton, Remsen & Haffelfinger, | 624, 626 & 628 Market Street. | 1879 [*sic*]. 1 vol. sm. 16mo. pp. 237, frontisp. > Appendix. Mrs. Maxwell's Colorado Museum. Catalogue of the Birds. (By Robert Ridgway.) pp. 226–237.

Pub. 1878 (my copy received Oct., 1878).—The bird-matter is a reprint of the two papers published in *Field and Forest*. See 1877, RIDGWAY, R.

1878. SAGE, J. H. Birds of the Garden and Orchard. < *Familiar Science and Fanciers' Journ.*, new ser., v, March, 1878, p. 50.

Read before Middletown (Conn.) Scientific Association, Feb. 12, 1878.

1878. [Scott, W. E. D.] Winter Notes [on] birds about Princeton, [N. J.] < *The Country*, i, 1878, pp. 164, 196, 212, 229, 244.

1878. [Scott, W. E. D.] Notes from Ithaca, N. Y. < *The Country*, i, Jan. 19, 1878, p. 165. See p. 115.

1878. [Scott, W. E. D.] Notes about some of the rarer birds about Princeton, N. J. < *The Country*, i, April 13, p. 354; ii, April 27, p. 9.

1878. [Scott, W. E. D.] Birds about Denver [Col.]. < *The Country*, ii, June 22, 1878, p. 136.

Remarks upon the ornithology of the season; *Eudromias montanus*; *Speotyto cunicularia* var. *hypogæa*; hawks and others.

1878. [Scott, W. E. D.] A mountain drive. < *The Country*, ii, 1878, pp. 152, 168.

Observations upon birds in the foot-hills near Denver, Col.

1878. Scott, W. E. D. Some Birds breeding about the Twin Lakes, Colorado. < *The Country* (newspaper, N. Y.), July 20, 1878.

Sphyrapicus thyroideus, *Zonotrichia leucophrys* (var. *intermedia?*), *Regulus calendula!* The latter specially interesting—nest and eggs described.

1878. "S. E. B." Late and Early Birds. < *Forest and Stream*, x, Feb. 28, 1878, p. 55.

Gallinago wilsoni wintering in Central New York; song birds wintering in New England.

1878. Sennett, G. B. Notes on the Ornithology of the Lower Rio Grande of Texas, from Observations made during the Season of 1877. By George B. Sennett, of Erie, Pa. Edited, with Annotations, by Dr. Elliott Coues, U. S. A. < *Bull. U. S. Geol. Surv. Terr.*, iv, No. 1, 1878, pp. 1–66.

A specially important memoir, containing valuable and interesting observations on the habits of Texan birds. Much of the matter is entirely new. The author made a large collection of birds, and closely studied their habits in the breeding season. He was enabled to add several species to the fauna of the United States. The nomenclature and technic of the article are by the editor.—*Parula nigrilora* Coues, p. 11, n. sp. *Æchmoptila* Coues, p. 48, g. n., = *Leptoptila auct. nec* Less.

1878. Stevens, F. Notes on a few Birds [20 spp.] observed in New Mexico and Arizona in 1876. < *Bull. Nutt. Ornith. Club*, iii, No. 2, April, 1878, pp. 92–94.

1878. Tiffany, W. L. Notes on Three Rare Birds of Minnesota. < *Am. Nat.*, xii, No. 7, July, 1878, pp. 470–472.

Interesting observations on *Ampelis garrulus*, *Hesperiphona vespertina*, *Coturniculus lecontii*.

1878. Wilson, A., *and* Bonaparte, C. L. American Ornithology; | or, the | Natural History | of the | Birds of the United States. | Illustrated with plates | engraved from drawings from nature. | By | Alexander Wilson | and Charles Lucian Bonaparte. | — | Popular Edition. | — | Vol. I[–III]. | [Monogram.] | Philadelphia: | Porter & Coates, | 822 Chestnut street. | [No date—1878.] 3 vols. in 1, large 8vo. pp. iii–vi (Title and Contents of Vol. I), ix–cxxxii (Ord's Life of Wilson), i–xvi (Baird's Catalogue of N. A. Birds), 1–214 (to end of Vol. I); pp. iii–viii (Title and Contents of Vol. II), 9–390 (to end of Vol. II); pp. v–viii (Title and Contents of Vol. III), 9–134 (to end of

1878. WILSON, A., *and* BONAPARTE, C. L.—Continued.

"Wilson"), 1 l., pp. 139–426 (being "Bonaparte", with Index to both); "plates" (*i. e.* collections of figures on 28 leaves) 1–76 (Wilson's) + B 1–B 27 (Bonaparte's), uncolored.

This is the latest edition of "Wilson and Bonaparte", and one which has came to my knowledge since most of this Bibliography has been in type. It is a cheap popular edition, selling for $7.50, and should take well with the public, as it answers all practical purposes. The text is substantially identical with the same publishers' 3 vol. 8vo ed. of 1871, *q. v.*, the vols. here being bound in one, with the repeatedly broken pagination above indicated. Each of these reissues by Porter & Coates may be identified by the presence of Baird's 8vo *Catalogue* of 1858, *q. v.*; but I note no other addition to the matter of the earlier eds. The "plates", uncolored, are reduced from those of the 2 folio vols. which belong to the ed. of 1871 down to nearly the size of those in Brewer's 12mo ed. of 1840, *q. v.*, maintaining the same grouping of figures as in the originals; these groups, not the sheets on which they are printed, being numbered 1 to 76 for Wilson's, and B 1 to B 27 for Bonaparte's. The execution is rather coarse, but the figures retain to a degree the characteristics of the original models.

1878. WINKLE, N. Heralds of Spring. < *The Country*, i, Mar. 16, 1878, p. 293.

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1878. WOOD, W. The Birds of Connecticut. < *Familiar Science and Fanciers' Journal*, v (new series), 1878, pp. 6, 26, 49, 73.

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[NOTE.—With catch-titles. Chronological arrangement under each head. Joint-authorships under leading name. Figures refer to dates under which titles are alphabetized: double dates are found in the Bibliography at end of series of single dates; thus, 1877–78 at end of 1877. Anonymous, pseudonymous, editorial, and initial titles mostly omitted.]

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(Exclusive of the Bibliographical Appendix)

[NOTE.—The technical names of families, genera, and species, and the vernacular names of the latter, are indexed, together with their respective synonyms, so that a bird may be found under any name which has been applied to it. Some merely typographical synonyms which no one would look for are omitted. Subgeneric and subspecific terms are respectively treated as generic and specific.]

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